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THE AUSTRALIAN MUSEUM

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CATALOGUE

OF THE

AUSTRALIAN

STALK- AND SESSILE-EYED CRUSTACEA.

BY

WILLIAM A. HASWELL, M.A., B.Sc.

PRINTED BY ORDER OF THE TRUSTEES.

E. P. RAMSAY, F.L.S., CURATOR.

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PREFACE.

THE object aimed at in the present Work, which, it is intended, will be followed by others of a similar character, has been to present a complete Catalogue of all the Stalk- and Sessile-Eyed Crustacea, so far as these are at present known, with a description of each species, as well as of the tribes, families, and genera. The need of such compilations is much felt in Australia, on account of the absence in the Colonies of complete scientific libraries, and the consequent difficulties experienced by those studying the science of zoology in any of its branches, in obtaining access to original memoirs. It is hoped that the present Catalogue will not only afford a guide to the Museum collections, but will also prove a great boon to students of this branch of systematic Zoology, throughout the Australian Colonies generally.

A work of the present kind cannot lay claim to much originality,—the greater number of the descriptions having already been published elsewhere; but many of the species enumerated have not previously been recorded as inhabitants of Australian waters, and a very large number of new Australian localities for known Australian species are now here published for the first time. A short Introduction describing briefly the chief structural characteristics of the Stalk- and Sessile-Eyed Crustacea, has been added, and will, it is hoped, prove useful.

The classification followed in this Catalogue has been mainly that of Dana. Though this arrangement is in certain respects unsatisfactory, it has been thought advisable in a work like the present rather to adhere to this widely accepted classification, than to attempt any extensive modification of it.* When the description of an author has been quoted *verbatim*, or in an abbreviated form, his initials have been appended.

Mr. Haswell informs me that besides the works of the earlier authors, he has been indebted in the compilation of this Catalogue more especially to the memoirs of Dr. A. Milne-Edwards, particularly his "Recherches sur la Faune Carcinologique de la Nouvelle-Calédonie," and his "Etudes sur les Cancériens," to Dana's "Crustacea of the U. S. Exploring Expedition," to Heller's Crustacea of the "Reise der Novara," to Spence-Bates' "Catalogue of the Amphipoda," and to the numerous Carcinological Memoirs of E. J. Miers, especially his "Catalogue of the Crustacea of New Zealand." He desires also to take this opportunity of rendering thanks to those from whom he has received assistance—more especially to the Royal Society of Tasmania for kindly granting the loan of their copy of Dana's "Crustacea," to the Hon. William Macleay, and to Prof. M'Coy, for the loan of books and specimens.

The letters A.M. indicate that the species is represented in the collection of the Australian Museum.

ED. P. RAMSAY, CURATOR.

AUSTRALIAN MUSEUM,
March 1st, 1882.

*The direction in which to look for a more natural classification has been recently well pointed out by J. E. V. Boas.

INTRODUCTION.

THE Crustacea are a group of back-boneless or *invertebrate* animals, distinguished by the possession of a more or less hard jointed external crust or *exoskeleton*, nearly all living habitually in water, and breathing by means of gills.

Of the Crustacea the large group of the Malacostraca are distinguished from the rest (the Entomostraca) by the number of the segments of the body, of which there are always twenty, except in certain cases in which amalgamation or abortion of one or more of the segments has taken place.

Taking as a readily obtainable example of the Malacostracous Crustacea the common prawn* (*Penæus canaliculatus* of Milne-Edwards), we find that it consists of two clearly distinguishable parts—an anterior shield-like portion bearing the eyes and feelers and extending back over about a third of the length of the body, and a posterior portion, distinguished by being divided by transverse lines into rings or segments which are found to be freely moveable on one another, so as to confer a considerable degree of flexibility on this posterior region of the body. When one of these rings or *segments* is examined separately, it is found to consist above of a high convex dorsal arch, and below of a narrow straight ventral bar; on either side the dorsal arch sends down a free fold or flap, so that the ventral bar is situated in a deep longitudinal hollow or groove enclosed between these. The dorsal arch of each segment overlaps to a considerable extent that following it; the ventral bars are separated from one another by wide spaces occupied by a thin translucent membrane—the *sternal membrane*. The dorsal arch is called the *tergum*, the ventral bar the *sternum*, the side flaps

* The term Prawn is very generally applied in Australia to species of the genus *Penæus*, the genus *Palæmon* being less widely known as a article of diet.

are the *pleura*, while the portion of the sternum interposed on either side between the point of insertion of the appendage and the *pleuron* is called the *epimeron*. Each of these segments is found to possess a pair of appendages—the *swimmerets*—each attached by a movable joint to the sternum. When one of these appendages is detached, it is found to consist of a thick two-jointed basal portion—the *protopodite*—and two long narrow compressed laminæ made up of numerous very short transverse segments; the outer and larger of these laminæ is called the *exopodite;* the inner the *endopodite* of the appendage. In all there are seen to be six segments having the general character described above. The first three are rounded above; but the rest, especially the last, present a sharp dorsal keel, and the appendages of the first and of the last segments differ considerably in shape and position from those of the others. The appendages of the first segment are uniramous in both ~~segments~~ pairs; in the male a broad membrane—the *petasma*—is attached by a narrow stalk to the basal joint, and is united to its fellow in the middle line by a series of minute hooked spines; in the female the *petasma* is rudimentary; in the male, but not in the female, the second pair of appendages has a rudimentary third branch. The last pair of appendages are articulated at the hinder extremity of the segment, instead of being attached near the middle of the under surface; the basal portion—protopodite—is very large and stout, and the endopodite and exopodite are developed into broad plates. Lying between and above these appendages, and articulating with their segments, after the manner of an additional segment, is a narrow pointed body—the *telson*. The whole of this hinder jointed portion of the body of the Prawn is called the *abdomen*. The anterior, apparently unjointed, portion of the body is called the *cephalothorax*. The apparent absence of segmentation is due to the development of the great dorsal shield or *carapace*, into which the dorsal portions of the skeleton of the segments have coalesced—the several segments being, with the exception of the last, so intimately connected and fused as to be incapable of motion on one another. On the lower or ventral surface of the cephalothorax, however, the segmentation is distinct enough—the sterna of the constituent somites being readily traceable. The carapace is produced in front into a long

pointed process—the *rostrum;* its middle portion corresponds to the terga of the segments or somites which it covers; the side portions which constitute a pair of broad flaps covering the gills and corresponding to the pleura of the cephalothoracic segments, are called the *branchiostegites* or *gill-covers*. The appendages belonging to the cepthalothorax may be conveniently regarded as falling into two groups—the appendages of the head or cephalon, and the appendages of the thorax. The division between the two is indicated by a fold—the *cervical fold*—at the side of the mouth, and is marked out also in most of the group

FIG. I.—Appendages of *Penæus canaliculatus*.

a, Mandibles; *b*, first maxilla; *c*, second maxilla; *d*, first maxillipede; *e*, second maxillipede; *f*, third maxillipede; *g*, leg of first pair; *ex*, exopodite; *ep*, epipodite; 1-7, joints of the endopodite.

to which the Prawn belongs by a transverse groove on the carapace, the *cervical groove*, which, however, is but slightly indicated in the Prawn. The thorax, as thus marked off, consists

of eight segments—the last of which is movable on the rest; and each of these eight segments bears a pair of appendages. The appendages of the last five of these are the *ambulatory* and *prehensile legs*. Each of these consists of an exopodite and endopodite; the former is quite rudimentary, the limb being constituted by the endopodite. The endopodite of each limb consists of seven joints—the basal joint is called the *coxa* or *coxopodite;* the second is the *basus*, *basos*, or *basipodite;* the third is the *ischium* or *ischiopodite;* the fourth is the *meros*, *merus*, or *meropodite;* the fifth is the *carpus* or *carpopodite;* the sixth the *propodos* or *propodite;* the seventh and last is the *dactylos*, *dactylus*, or *dactylopodite*. Attached to the coxopodite is a branchial appendage—the *epipodite*. The first three of these five posterior thoracic appendages take the form of pincers or *chelæ;* the last two end in simple pointed claws; the *chelate* form is brought about by the production of the propodite beyond the point of insertion of the dactylopodite into a slender process extending as far as the extremity of the latter. In these chelate thoracic appendages the meropodite is frequently designated the *arm*, the carpopodite the *wrist*, the propodite the *hand*, the distal prolongation of the latter the *immobile finger*, and the dactylopodite the *mobile finger*. The three anterior pairs of thoracic appendages are the *maxillipedes* or *foot-jaws*. The last of these has an inner division or endopodite very similar in appearance to the last two pairs of ambulatory legs, and having the same number of joints: its exopodite, however, is much larger than in the case of the ambulatory limbs, consisting of a long compressed, many-jointed palp; the epipodite is similar to those of the ambulatory legs. In the second pair of maxillipedes the endopodite is much shorter and the joints more compressed than in the third. The first pair of maxillipedes is constructed on a different plan; the endopodite takes the form of an ovate hair-bordered plate; the exopodite is slender and palpiform, and has on its outer side a delicate membranous lamella; the epipodite consists of a membranous lamina without branchial filaments.

The appendages of the segments of the head or cephalon are of two sorts—those attached round the mouth and connected with *mastication*—viz., the two pairs of *maxillæ* and the *mandibles;* and the *sensory* appendages attached to the front of the

head,—viz., the *antennæ*, the *antennules*, and the *eyes*. The second pair of maxillæ much resemble the first pair of maxillipedes in general appearance, the coxopodite and basipodite are produced inwards in the form of deeply bilobed lamellæ fringed internally with short hairs; the ischium forms a short process internal to this—the other joints being undeveloped; the exopodite and epipodite combine to form a broad plate—the *scaphognathite*—which lies in the cervical fold, and during life is constantly in motion, scooping the water out of the branchial cavity, and thus causing a constant current to flow over the gills. The first pair of maxillæ consist of three parts—two thick internal plates, bordered with stout bristles, and representing probably the coxopodite and the basipodite, and an external palpiform appendage provided at the end with a few longish hairs. The mandibles consist of two parts—a thick hard body, obscurely toothed internally, and a large leaf-like appendage. The sternum of the segment bearing the mandibles is called the *endostome* or *palate*. In front of the mandibles and overhanging the mouth is a fleshy median prominence—the *labrum*. In front of the orifice of the mouth *(buccal orifice)* is a flat space, not very wide in the Prawn, and hidden by the appendages of the mandibles, which corresponds to the sternum of the next preceding or antennary somite, and is termed the *epistome*.

The *antennæ* (or *external antennæ* as they are frequently termed by systematists in contradistinction to the *internal antennæ* or *antennules)* consist of a short basal joint—the *coxicerite*, on which is situated the orifice of the "green gland," or supposed renal organ; a second, broad and short joint, the *basicerite*, to which is articulated externally the *scaphicerite*, *squame*, or exopodite of the antennæ—an elongate scale; a third, fourth, and fifth joints, narrower than the preceding, and called respectively the *ischiocerite*, *merocerite* and *carpocerite*, and articulated with the last an extremely long many-jointed *flagellum* or *procerite*.

The appendages of the next antecedent somite are the *antennules* or internal antennæ. These consist of three basal joints, the first of which is enlarged and contains the organ of hearing, and of two terminal many-jointed filaments—the *flagella* —which in the Prawn are very short. The first pair of cephalic

appendages are the stalked eyes, the stalk or *peduncle* of which consists of a short basal portion—the *basiophthalmite*, and a larger terminal portion—the *podophthalmite*—bearing the eye at its extremity.

The body of the Prawn is thus seen to consist of twenty segments or somites, six belonging to the head, eight to the thorax, and six to the abdomen.

The breathing organs of the Prawn consist of gills or *branchiæ* situated in the cavities enclosed on either side of the thorax by the branchiostegites or lateral folds of the carapace. These branchiæ in the Prawn are of the kind termed *trichobranchiæ*, *i.e.*, they consist of a central stem, from which are given off numerous lateral filaments. They are twenty in number altogether in the Prawn, exclusive of the branchial epipodites already mentioned as connected with the bases of the legs. Two of the gills in each thoracic segment, except the first and last, are attached to the membrane between the sternum and the coxa of the appendage; the first thoracic appendage has one gill in that position, and the last none; one gill is united to the surface of the pleuron above the base of each of the thoracic limbs except the first.

The organs of circulation of the Prawn consist of a heart and blood-vessels. The heart is a polygonal sac situated in an enclosed cavity—the *pericardial sinus*—immediately below the carapace; it receives from the pericardial sinus through certain slits in its walls the blood brought back from the gills by vessels called the branchio-cardiac vessels. The blood thus returned to the heart from the gills is propelled to the various tissues and organs of the body by six arterial trunks, five anterior and one posterior, and eventually finds its way into large irregular ill-defined vessels or sinuses, from which it is conveyed to the gills by the afferent branchial vessels.

The organs of digestion of the Prawn consist of an alimentary canal, divided into œsophagus, stomach, and intestine, and extending through nearly the whole length of the body from the mouth to the under side of the telson, where the anus is situated. The mouth is a slit, opening into a wide tube—the œsophagus, which passes nearly directly upwards to enter a tolerably spacious

sac—the cardiac division of the stomach. This sac has a system of calcareous levers in its walls connected with teeth projecting into the interior, and worked by appropriate muscles, so as to form an efficient and powerful apparatus for the mastication of food. Opening from the cardiac division of the stomach behind is another sac—the pyloric division of the stomach; the walls of this division are raised into folds, covered with hairs so as to form a kind of strainer to prevent any but finely comminuted particles of food from passing further. The strainer opens into the narrow thin-walled intestine, which extends in a straight course to the anal aperture. The liver consists of two large, equal, lateral halves, one lying on each side of the stomach, the two bile-ducts opening into the pyloric division.

The nervous system consists of a cerebral or cephalic ganglion, situated in the front part of the head below the root of the rostrum, and giving off nerves to the eyes, antennæ, antennules, and the parts about the head, and of a chain of nerve ganglia extending throughout the length of the body. Of these ganglia six are situated in the thorax, lying on the lower or ventral aspect between the bases of the legs, and six lie in a corresponding position in the abdomen. The first thoracic ganglion is larger than the rest, and is connected by two nerves or commissures, one passing on each side of the œsophagus, with the cerebral ganglia, and by other two with the second thoracic ganglia; the other thoracic ganglia are similiarly connected by double commissures, but the commissures between the abdominal ganglia are single and undivided.

The organs of sense consist of the eyes, certain cilia on the under surface of the flagella of the antennules supposed to be olfactory in function, and the auditory sacs situated in the basal joint of the antennules.

The reproductive organs consist of the sexual glands (*ovary* and *testis*), situated above and behind the pyloric division of stomach and behind the heart, and the ducts (*oviducts* and *vasa deferentia*) by which their products are conveyed to the exterior. The oviduct opens on the coxopodite of the antepenultimate thoracic appendage; the vas diferens on the coxopodite of the last pair of appendages.

In the course of its development from the egg, the Prawn passes through two remarkable stages before gaining the adult form. In the first of those stages the larva assumes the form of an oval body with a median frontal eye, a large labrum and three pairs of setose swimming appendages. In the latter it has a rounded carapace, antennules, antennæ, and mandibles, with four other pairs of appendages of which the last three are bifurcated, and five pairs of short lamellar processes; the abdomen has long and distinct segments, and ends in two setose processes, but is destitute of appendages. The first of these is called the *Nauplius*, and the second the *Zoœa* stage.

The Prawn has the majority of the features thus briefly sketched in common with the Crayfishes, the Crawfishes or Rock-Lobsters, the Shrimps, and other forms of Crustacea belonging to the great division of the Macroura or long-tailed Decapods. Though differing considerably from one another in the form of the appendages and the arrangement and structure of their gills, the members of these different groups all agree in the number and relations of the segments of the head, thorax, and abdomen, in the general character of the appendages with which these segments are severally provided, and in the relative position and general structure of the digestive, nervous, circulatory and reproductive organs.

Nearly related to these, but with some marked points of difference, are the Crabs, Brachyura or Short-tailed Decapods. If we examine any of the common shore-crabs, we find the general shape of the body very different from that of the Prawns. We find, as in the Prawn, a broad cephalo-thoracic shield or carapace, but this, instead of merely occupying the anterior portion of the body of the animal, seems to cover the whole upper surface with a hard shell. The reason of this appearance is that in the Crab, though the total number of segments in the body is the same as in the Prawn, the whole of the abdomen is in an extremely rudimentary condition, and is tucked in under the thorax so as to be quite concealed when the animal is looked at from above. Though the abdominal segments, except in cases in which several coalesce in the full grown animal, are the same in number in the Crab as in the Prawn, there are no swimmerets appended to them; in the female, however, the four anterior

pairs are represented by appendages which serve for the attachment of the eggs, and in the male two pairs of styliform appendages having the function of external reproductive organs are connected with the first and second segments.

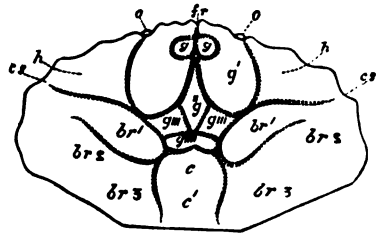

FIG. II.—Diagramic view of the upper surface of carapace of a Crab, shewing the position of the regions.

fr, Front; *o*, eye; *g*, epigastric region; *g'*, protogastric; *g''*, mesogastric; *g'''*, metagastric; *g''''*, urogastric; *h*, hepatic region; *cs*, portion of cervical groove; *br*^{1}, epibranchial region; *br*^{2}, mesobranchial; *br*^{3}, metabranchial.

The carapace is flattish, or gently convex above, and turns down suddenly at the sides so as to form a well-marked border. Below it fits down closely over the bases of the thoracic limbs, leaving only a small space in front of the great *chelipedes* or pincer-claws for the ingress of the water to the gills. The surface of the carapace of the Crab is generally marked out by grooves into certain regions. The space between the eyes is termed the front (Fig. ii., *fr.*); in some Crabs, as in the Prawn, it is drawn out anteriorly in the form of a beak or rostrum. Behind the front is the *gastric region (g)*, so called from its corresponding in a general way with the situation of the stomach within the carapace; the gastric region is sub-divided frequently into certain subregions; these are usually a small anterior *epigastric* region *(g)*, followed by two larger *protogastric* regions *(g')*, behind and between which is a single *mesogastric* region *(g'')*; external to the mesogastric region on each side is a *hypogastric* sub-division *(g''')*; and behind these a mesial *urogastric (g'''')*. Behind the gastric region is the *cardiac (c)*. Between the gastric region and the anterior portion of the antero-lateral borders of the carapace is the *hepatic* region *(h)*. Behind the hepatic region

is the large branchial region, which may be divided into anterior, *epibranchial* (br^1); middle, *mesobranchial* (br^2); and posterior, *metabranchial* (br^3) lobes.

On the under surface of the carapace on either side of the mouth a curved line divides off an anterior, *subhepatic* (Fig. iii., *sh*) from a posterior and internal *pterygostomial* or anterior pleural region (*pt*).

The appendages of the thoracic region in the Crab correspond closely to those of the Prawn. The posterior five are the ambulatory legs, the first of which is developed into the great pincer-claws or *chelæ*, while the rest are simple. The third pair of maxillipedes (Fig. iii., *e*) differ very much in shape from those of the Prawn, their ischiopodite and meropodite being greatly expanded, and the two appendages being applied closely to one another by

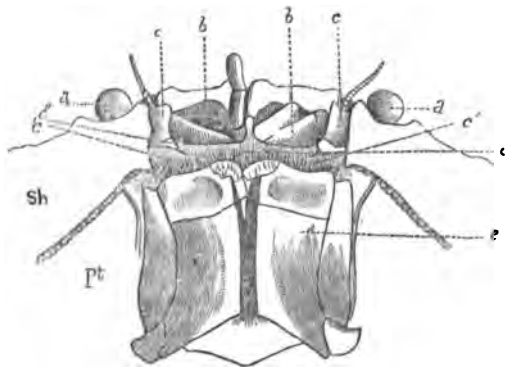

FIG. III.—Oral region of a Crab.

a, Eyes; *b*, antennules; *c*, third joint of antennæ; *c'*, first joint of antennæ; *c''*, second joint; *d*, epistome; *e*, external maxillipedes; *sh*, subhepatic region; *pt*, pterygostomial region.

their inner edges, so as to form a sort of pair of folding-doors closing up the orifice of the mouth. The remainder of the oral appendages (Fig. iv.) with differences in detail, resemble the corresponding structures in the Prawn in their general arrangement. The external antennæ (Fig. iii., *a*) are very small, and their basal joint or coxicerite is fused with the antennary sternum or epistome, so that what is frequently called the basal joint in descriptive carcinology is really the *basicerite*; the lateral squame

is entirely wanting, and the flagellum is very small. The antennules (Fig. iii., *b*) are also small, and are lodged, when retracted,

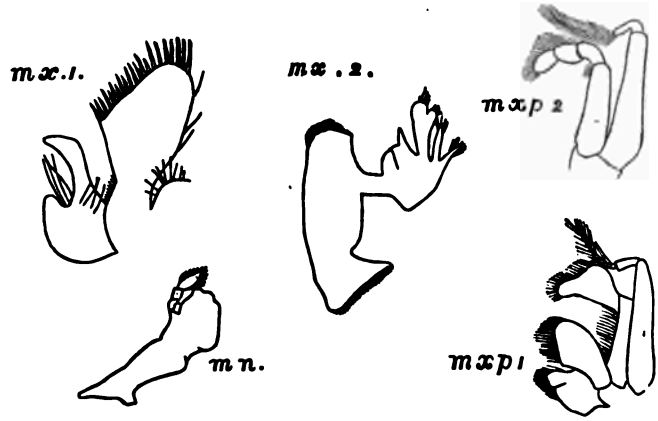

FIG. IV.—Oral appendages of a Crab *(Leptodius)*.
mn, Mandible; *mx* 1, first maxilla; *mx* 2, second maxilla; *mxp* 1, first pair of maxillipedes; *mxp* 2 second pair of maxillipedes.

in distinct fossæ excavated under the front, and separated from one another by a vertical partition. The eyes are situated in distinct orbits external to the antennæ, but the base of the peduncle is inserted, as in the Prawn, anterior and superior to the insertion of the antennules.

The gills of the Crab are fewer than those of the Prawn,—being at the most but nine in number on each side. They are of the class of branchiæ called by Huxley *phyllobranchiæ, i.e.*, they consist of a central stem on which are set at right angles two rows of thin plates or lamellæ superimposed upon one another like the leaves of a book.

The circulatory, digestive, and reproductive organs of the Crab are similar to those of the Prawn.* The nervous system is much more concentrated—the thoracic ganglia having coalesced into a single mass. Unlike the Prawn, the Crab does not go

* For an account of the various forms of the gastric apparatus in the different families and genera of *Brachyura*, *vide* Ernot Nauck, "Das Kaugerust der Brachyuren," Leitschrift f. Wiss. Zool., xxxiv., pp. 1–69.

through a distinct *Nauplius* stage, but when it leaves the egg has the form of a *Zoœa*, with a short carapace, often armed with spines, with three eyes—a median simple eye, and two lateral compound—with antennules, antennæ, mandibles, two pairs of maxillæ, with the first two thoracic appendages well developed and ending in endopodites and exopodites, but with the remainder of the thoracic appendages rudimentary, and with no abdominal appendages.

Intermediate in many respects between the Crabs or Brachyura and the Macroura, are a series of forms constituting the group Anomoura, a heterogeneous order comprising the hermit crabs—in which the abdomen is in a soft and imperfect condition, being habitually sheltered in a univalve shell, and the abdominal appendages are rudimentary—and other families in which the abdomen may be better developed than in the Crab, and may not be permanently tucked in beneath the carapace as in the latter.

Another extensive Order of the Crustacea (the Edriophthalmata) is represented by such forms as the Sand-hoppers of the sea-shore, and the Wood-lice so common about decaying wood. The body of the Sand-hopper *(Orchestia quadrimana)* is laterally

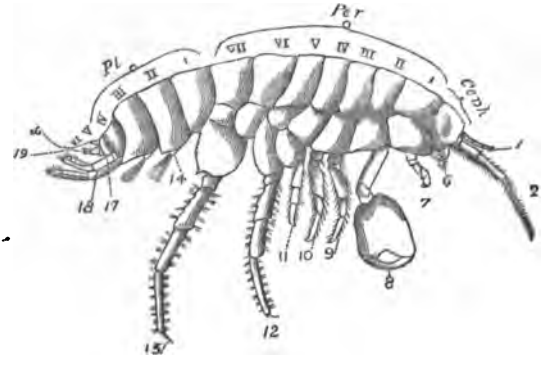

FIG. V.—Sand-hopper *(Talorchestia quadrimana)* magnified.

ceph, cephalon; *per*, pereion; *pl*, pleon; i.–vii., segments of the pereion and of the pleon; 1–19, appendages; *x*, telson.

compressed, and consists of a small head or *cephalon (ceph)*, of a thorax or *pereion (per)*, consisting of seven distinct segments and not covered by a carapace, and an abdomen or *pleon (pl)*, of six

segments with a terminal telson. The head bears a pair of eyes, internal and external (or rather superior and inferior) antennæ, (1, 2) a pair of mandibles (Fig. vi., 3), two pairs of maxillæ (4 and 5), and one pair of maxillipedes (6). The eyes are sessile or unstalked, and consist of an aggregation of simple ocelli. The internal or superior antennæ are very small in the Sand-hopper, but may be largely developed in its allies, and are formed of a peduncle or stalk consisting of three joints and a short flagellum. The external or inferior antennæ are much longer than the superior pair; their peduncle consists in the Sand-hopper of three segments, but in the majority of its allies there are five; there is a long many-jointed flagellum. In front of

FIG. vi.—Appendages of the Sand-hopper *(Talorchestia quadrimana)* magnified.

3, Mandibles; 4, first maxilla; 5, second maxilla; 6, maxillipedes; 7, first pair of gnathopoda; 15, second pair of pleopoda.

the mouth is a large movable *labrum*. The mandibles (Fig. vi., 3) are strong triangular organs, with a toothed cutting apex and internal grinding tubercle, and have no appendage in the Sand-hopper. The maxillæ are delicate and foliaceous; the first pair (Fig vi., 4) consist of three plates armed with ciliated spines;

the second pair (Fig. vi., 5) of two plates with numerous hairs at their extremities. The maxillipedes (Fig. vi., 6) are broad and foliaceous—the *basos* and *ischium* being produced internally into lamellar expansions. Behind the mouth is a lower lip, *labium* or *metastoma*. The following two pairs of appendages belonging to the two first distinct thoracic appendages are formed on the same plan, and are called the *gnathopoda* (Fig. v., and Fig. vi., 7 and 8); like the legs of the Prawn and the Crab, each of these consists of seventeen joints; the first or coxa is expanded and plate-like; the basos is long and narrow; the ischium, meros and carpus short; the propodos much larger in the posterior than in the anterior pair, and with the dactylos forming a subchelate hand, the dactylos shutting backwards against a lower or distal *palmar border* of the propodos so as to constitute an organ of prehension. The two following pairs of appendages *(pereiopoda)* (Fig. v., 9 and 10) resemble the gnathopoda, except that the propodos and dactylos do not form a subchelate hand, and like them are turned forwards. The remaining three pairs of thoracic appendages *(posterior pereiopoda)* (11, 12, 13) resemble in general form the anterior pereiopoda, but are turned backwards.

The appendages of the abdomen *(pleopoda)* consist of six pairs. The first three (Fig. v., 14, Fig. vi., 15) pairs consist of a basal *protopodite* with a pair of equal, foliaceous, many-jointed *rami*, much like the abdominal swimmerets in the Prawn. The fourth and fifth pairs (Fig. v., 17 and 18) have the rami styliform and one-jointed; the last pair (19) are very small in the Sand-hopper. Finally, the *telson* of the Sand-hopper is small, being represented only by a blunt conical elevation. The branchiæ of the allies of the Sand-hopper consist of delicate sacs, one attached to the coxa of each of the second pair of gnathopoda, and of each of the pereiopoda. In the female delicate membranous plates *(oostegites)*, serving as a protective covering to the eggs, are attached above and internal to the first four pairs of branchiæ.

The alimentary canal presents, as in the Prawn, a gastric dilation situated in the head, and possessing an armature of calcareous pieces and of teeth. A small cœcal diverticulum—the *cervical gland*—is given off from the intestine immediately behind the stomach. The liver is in the form of tubes lined

internally by a single layer of hepatic cells. Most of the muscular fibres of the intestine are longitudinal, but near the anus there are two distinct layers—the external layer circular, and the internal longitudinal. The epithelium of the anterior portion of the intestine consists of short, thick, densely granular cells; in the posterior portion the cells are longer and their contents less coarsely granular. A pair of tubular glands—the rectal glands—open into the rectum or hinder portion of the intestine; and a single gland—the anal gland—situated in the telson, opens immediately in front of the anus. The whole of the alimentary canal is surrounded by a complete investment of what is called the "fatty body,"—which consists entirely of rounded or polygonal nucleated cells.

The heart of the Sand-hopper and its allies is elongated and tubular, extending from the head to near the hinder extremity of the pereion. At each end and usually from the sides arteries are given off, and there are several pairs of apertures *(venous ostia)* by means of which the blood enters the heart from the surrounding blood-containing space—the *pericardial sinus*.

The nervous system consists of a cephalic ganglion situated in the head, of a chain of seven ganglia in the thorax, the most anterior of them being connected with the cerebral ganglion by commissures which embrace the gullet or stomach, and of three abdominal ganglia.

The organs of sense consist (1) of auditory hairs situated on the basal joint of the upper antennæ, (2) of sensory (tactile?) setæ on the last and penultimate joints of the lower antennæ, (3) of the *calceoli* or "slipper-shaped organs," (olfactory organs) situated on the flagella of one or both pairs of antennæ, (4) certain sensory setæ occurring on the anterior margin of the second pair of maxillæ, and (5) of the eyes.

The ovaries are two cylindrical sacs, situated one on each side of the alimentary canal, and the oviducts open on the under surface of the fifth thoracic segment. The testes are narrow tubes opening externally on the under surface of the seventh thoracic segment.

The young of the Sand-hopper go through no metamorphosis in the course of their development, but when they emerge from the egg differ little save in size from the full-grown animal.

Nearly connected with the Sand-hopper and its allies (constituting the group Amphipoda) is the group Isopoda, represented by the Wood-lice and the related marine forms. These have the segments of the body and their appendages constructed on the same general plan as the Amphipoda; but the body is usually compressed from above downwards instead of from side to side, the first three pairs of thoracic appendages are usually turned forwards and the last four backwards, the pleopoda are delicate lamellæ which serve as gills, and more or fewer of the segments of the abdomen are usually coalescent.

Another group of the Malacostracous Crustacea, differing considerably from the preceding, is that formed by the *Squillæ* and their allies the *Gonodactyli*. The body of *Gonodactylus chiragra* (Fig. vii.)—the commonest Australian representative of this group—is elongated like that of the Prawn, but, instead of the carapace covering all the thorax but one segment, as in the latter, it is very small, and covers only the segments of the head. Moreover, in *Gonodactylus* the first two segments, the ophthalmic and antennulary somites, are movable on one another, and lie on the same line with the rest of the body, whereas we have seen that in the Prawn the anterior segments have their sterna bent

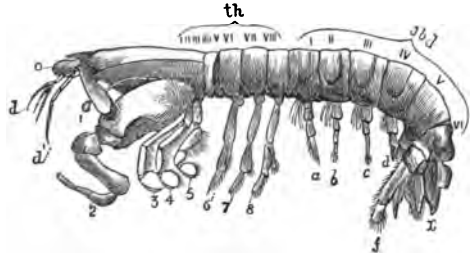

FIG. VII.—*Gonodactylus chiragra*, natural size.

th, Thorax; *abd*, abdomen; i.–viii., segments of the thorax; i.–vi., segments of the abdomen; *o*, eye; *d*, upper antennæ; *d'*, lower antennæ; 1–8, thoracic appendages; *a*, *b*, *c*, *d*, *f*, appendages of the abdomen; *x*, telson.

upwards, and amalgamated with those of the rest of the cephalothorax. The eyes in *Gonodactylus* (Fig. vii., *o*) are stalked. The antennules (Fig. viii., *a* 1) have a three-jointed peduncle supporting three short, multi-articulate flagella; the antennæ (Fig. viii., *d* 2) have a single, short, stout flagellum, and bear at the base a large scaphocerite or squamous appendage. The mandibles (*Mn*) are divided at the extremity into two obscurely toothed rami. The

maxillæ (1 *mx* and 2 *mx*) are small and delicate. Closely approximated to the sides of the mouth are a series of five pairs of leg-like

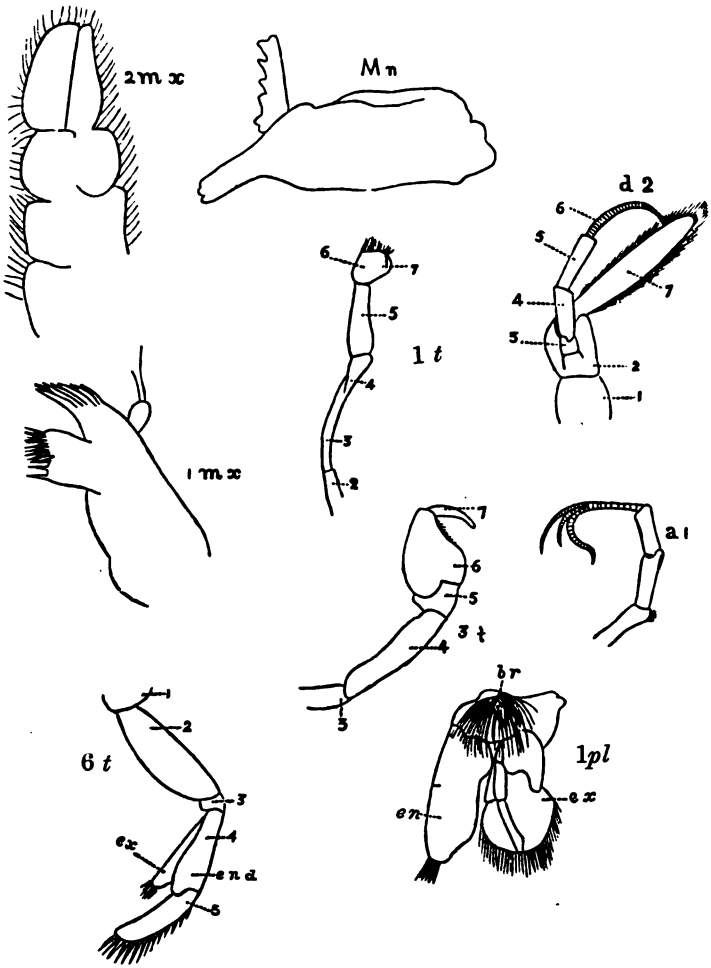

FIG. VIII.—Appendages of *Gonodactylus chiragra*, magnified.

mn, Mandible, 1 *mx*, first pair of maxillæ; 2 *mx*, second pair of maxillæ; *a* 1, antennules; *d* 2, antennæ; 1 *t*, first pair of thoracic appendages; 3 *t*, third pair; 6 *t*, sixth pair; 1 *pl*, first pair of abdominal appendages; *en*, endopodite; *ex*, exopodite; *br*, branchial filament.

appendages; the first of these (Fig. vii., 1, Fig. viii., 1 *t*) is elongated but thin and feeble, the second pair (Fig. vii., 2) constitute the

large prehensile limbs, which have the penultimate joint extremely thick and powerful, and the terminal joint swollen at the base, slender and pointed at its extremity, and capable of being folded against the preceding joint in the same way as the blade of a pocket-knife shuts up in its handle. Succeeding the large pair of prehensile appendages are three smaller pairs (Fig. vii., 3, 4, 5, Fig. viii., 3 *t*), also prehensile and very similar to one another in appearance, having the proximal joints rather slender and laterally compressed, the propodos ovate and flattened, and the dactylus shutting down on its anterior or lower border. Behind there are three pairs of non-prehensile legs (Fig. vii., 6, 7, 8, Fig. viii., 6 *t*) divided into endopoditic and exopoditic rami. The following six segments may be regarded as corresponding to the abdomen of the Prawn; the first five are each provided with a pair of swimmerets (Fig. vii., *a*, *b*, *c*, *d*, and Fig. viii., 1 *pl*) consisting of a basal portion or protopodite, and two broad hair-fringed rami, representing respectively the endopodite and exopodite. The last segment bears a large pair of appendages (Fig. vii., *f*) placed at the side like the corresponding appendages in the Prawn, and consisting of a basal protopodite and two hair-fringed rami, the outer of which is spinose, and is provided at its extremity with a separate ovate terminal portion. Following the last segment of the abdomen is the large sculptured telson (Fig. vii., *x*).

The organs of respiration of Gonodactylus consist of bunches of short filaments attached to the abdominal appendages. (Fig. viii., 1 *pl*, *br*) The heart, unlike that of the Prawn or the Crab, is an elongated tube extending through the thorax and abdomen, and provided with five pairs of slits—the venous ostia. The stomach is less complex than in the Prawn or the Crab, and the intestine is a straight tube into which ten pairs of hepatic cœca open. The nervous system consists of a head-ganglion or brain, of a large hypopharyngeal ganglion composed of the amalgamated anterior thoracic ganglia, of three smaller ganglia, one in each of the last three segments of the thorax, and of six large abdominal ganglia.

During its development the Gonodactylus passes through curious larval *(Zoœa)* stages, in which it is provided with a large carapace armed with spines.

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CRUSTACEA MALACOSTRACA.

I. PODOPHTHALMATA.

Malacostracous Crustacea with stalked eyes, mandibles and maxillæ adapted for mastication, and a dorsal shield or carapace covering the whole or the greater part of the dorsal and lateral regions of the thorax.

ORDER DECAPODA (EUBRANCHIATA).

Branchiæ enclosed in a branchial chamber formed by the lateral portions of the carapace.

Tribe BRACHYURA.

Abdomen short, inflexed beneath the thorax, without swimmerets, and with no appendages on the penultimate segment. Carapace greatly developed, forming wide branchial chambers above the bases of the legs. Sternum never linear; vulvæ situated on the sternum. Antennæ with the flagella usually very short, especially those of the inner pair, which are lodged in distinct cavities. External maxillipedes operculiform. Buccal cavity distinctly defined in front.

Sub-Tribe OXYRHYNCHA.

Carapace more or less narrowed and rostrate in front; the branchial regions greatly developed, the hepatic regions rudimentary. Branchiæ nine in number. Internal antennæ longitudinally plicate. Epistome usually broad. Buccal cavity sub-quadrate; efferent canal from the branchiæ terminating at the sides of the palate. Fourth joint of the external maxillipedes inserted at the summit or at the antero-internal angle of the third joint. Male genital appendages inserted in the base of the fifth pair of legs.

Family I. INACHIDÆ.

Eyes non-retractile or retractile against the sides of the carapace. No defined orbits, but often a well marked præ-ocular and post-ocular spine. Basal joint of antennæ usually slender, sometimes moderately enlarged. [*Miers.*]

Sub-Family Leptopodiinæ.

Eyes slender, non-retractile and laterally projecting. Præ-ocular and post-ocular spines minute or wanting. Basal antennal joint very slender throughout its length. [*M.*]

Genus STENORHYNCHUS, Lamarck.

Rostrum more or less elongated, of two slender, contiguous, spiniform cornua.

1. Stenorhynchus curvirostris.

Stenorhynchus curvirostris, A. Milne-Edwards, Journal des Museum Godeffroy, Band i., Heft iv., p. 75.

Carapace narrow in front, dilated behind; two spines in the middle line; one on the gastric region, the other on the cardiac; another spine on the branchial region; lateral borders of the branchial region dilated into a large tuberosity, in front of which are a few spines of which the most acute occupy the hepatic regions. Front broad, flattened and formed of two very short sharp and triangular teeth, separated on the middle line by a shallow fissure; at their base on each side a sub-orbital tooth. [*A. M.-E.*]

Bass' Straits.

2. Stenorhynchus fissifrons. **A.M.**

Stenorhynchus fissifrons, Haswell, Proc. Linn. Soc. N.S.W., Vol. iii., p. 409, and Vol. iv., p. 432.

Gastric region of the carapace with a short blunt spine and two tubercles in the form of a triangle, with the apex directed backwards and formed by the spine. Rostral spines short, acute; frontal furrow extending as far back as the posterior angles of the orbits.

Port Jackson. Occurs also in New Zealand.

3. **Stenorhynchus brevirostris.** **A.M.**

Stenorhynchus brevirostris, Haswell, Proc. Linn. Soc. N.S.W., Vol. iii., p. 408, and Vol. iv., p. 432, pl. xxvii., fig. 5.

Gastric region with five tubercles, of which four are situated anteriorly in a transverse line and very small, while the fifth is much larger and situated in the middle line close to the posterior border of the region. Cardiac region with three tubercles, the two anterior being close together in the same transverse line and very large; the third small, situated close behind them. Two obscure tubercles on the lateral hepatic regions, and three on the branchial. Lateral margins with two prominent triangular teeth. Rostrum short, of two bluntish teeth, which do not reach further forward than the distal extremity of the second joint of the external antennæ, the furrow between them not extending so far back as the line joining the posterior borders of the orbit. No infra-orbital, nor supra-orbital spines. Arm with three or four teeth on its upper surface; hand carinated externally in the female.

Port Jackson; Port Denison.

Genus ACHÆUS, Leach.

Rostrum very short, emarginate.

4. **Achæus lacertosus.** **A.M.**

Achæus lactertosus, Stimpson, Proc. Acad. Nat. Sci., Phil., Vol. ix., p. 218 (1857).

Achæus breviceps, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 433.

Carapace triangular, regions rather prominent, surface smooth, without spines, slightly pubescent. Hepatic region with a small obtuse, laminiform tooth, extending horizontally. Rostrum as long as broad, the extremity bilobed. External antennæ with the mobile portion filiform, longer than the carapace. Peduncle of the eyes smooth. Chelipedes large, shape almost as in *Mycteris*, merus very stout, hand incurved, fingers compressed. Ambulatory legs very slender, those of the first pair thrice the length of the carapace, the third and fourth pairs with a falciform dactylus. [*St.*]

Port Jackson; Port Stephens.

Sub-Family Inachinæ.

Eyes slender and retractile. Præ-ocular spine usually wanting, post-ocular usually distinct. Basal antennal joint usually very slender throughout its length, not narrowing distally. [*M.*]

Genus CAMPOSCIA, Latreille.

Rostrum very short, emarginate. Carapace elongated, sub-pyriform. Eyes long and slender. Outer maxillipedes with the merus joint elongated, obovate, and rounded at its distal end. Ambulatory legs very long.

5. Camposcia retusa. **A.M.**

Camposcia retusa, Latr., R. An. 2e éd., t. iv., p. 60; Guérin, Icon. Crust., pl. ix., fig. 1, Milne-Edwards, Hist. Nat. Crust. tome i., p. 283, pl. xv., figs. 15, 16; Adams and White, Zool. of H.M.S. "Samarang," Crust., p. 6. A. Milne-Edwards, Nouv. Arch. du Mus., t. viii., p. 255 (1872).

Body covered with woolly hair, longer and more abundant on the limbs. Carapace about once and a half as long as broad, convex, the regions tolerably distinct; rostrum very broad, truncate, and terminated by two small tubercles, which scarcely extend beyond the extremity of the basal joint of the antennæ. A strongish tooth on the lateral portion of the carapace at some distance behind the eyes. First pair of legs (chelipedes) cylindrical and terminated by slender chelæ, slightly curved inwards, denticulated on the borders. Legs of the third pair about twice as long as the carapace. [*M.-Edw.*]

Cape Grenville; Port Denison. A tropical species widely distributed in eastern seas; rare in Australia.

Genus EUCINETOPS, Stimpson.

Carapace sub-oblong. Rostrum short, bifid, slightly deflexed. Eyes extremely long and mobile. Outer maxillipedes with the merus joint short, truncated at the distal end. Ambulatory legs of moderate length.

6. Eucinetops Stimpsoni.

Eucinetops ? Stimpsoni, Miers, Ann. Mag. N. H. (5) Vol. iv., p. 3 (1879).

Carapace sub-pyriform and convex, upper surface without spines or tubercles. Rostrum deflexed; the spines of which it is composed small, flattened, acute, and separated by a narrow fissure. Immediately behind the eyes are two small blunt prominences; and a third, at a little distance, represents the post-ocular spine. There are two very small tubercles at the distal end of the slender basal antennal joint. The second and third joints are not, as in *E. lucasii*, very broad, but cylindrical. Anterior legs (in the female) very slender and smooth. Both the body and legs are pubescent. Length of carapace five-sixths of an inch. [*M.*]

N.E. Coast of Australia (Cuming).

Genus Oncinopus, De Haan.

Carapace elongate-triangular. Rostrum very short; front emarginate. Basal antennal joint very short, the next longer. Merus-joint of outer maxillipedes elongated and articulated with the next at its summit. Ambulatory legs slender, the penultimate joints of the first and second pairs more or less dilated and compressed, the fifth somewhat raised upon the dorsal surface.

7. Oncinopus subpellucidus. A.M.

Oncinopus subpellucidus, Stimpson, Proc. Acad. Nat. Sci., Philad., Vol. ix., p. 218.

Oncinopus angulatus, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 433.

Carapace much depressed behind. A low angular elevation on the hepatic region. Rostrum very short; frontal region with a well-marked mesial furrow. Eye-peduncles as long as the front. Arm trigonal, wrist smooth, rounded; fingers as long as the palm, slightly incurved, acute, toothed, meeting throughout their entire length. Second pair of limbs three times as long as the post-frontal region of the carapace; dactylus filiform. Following pairs of limbs decreasing in length backwards, dactyli falciform.

Port Jackson; Port Stephens; Port Molle; Cape Grenville. Common at a depth of four or five fathoms.

Genus Halimus, Latreille.

Carapace sub-triangular, with lateral marginal spines. Rostrum long, formed of two diverging cornua. Three spines above the

eye. Merus joint of the outer maxillipedes somewhat auriculated and produced at its antero-external angle. Anterior legs in male enlarged, palm slightly compressed. Ambulatory legs with the penultimate joint more or less flattened and dilated towards its distal end. [*M.*]

8. Halimus tumidus. **A.M.**

Halimus tumidus, Dana, U.S. Explor. Exped., Crust., i., p. 165. Hess. Archiv für Nat. 1865, p. 130.

Cornua of rostrum of moderate length, widely divergent. Carapace tumid; sides armed with four to six spinules; gastric region with three small tubercles triangularly placed and another faint one behind. Hand slender, broadest at base; fingers nearly or quite contiguous. Fifth joint of posterior feet twice as long as wide. Basal joint of antennæ spiniform at distal and external angle; its outer border with 2-5 spinules. [*D.*]

Port Jackson; Port Philip.

9. Halimus spinosus. **A.M.**

Halimus spinosus, Hess, Archiv für Nat. 1865, p. 129, pl. vi., fig. 1.

? H. truncatipes, Miers, Ann. and Mag. Nat. Hist. (5) Vol. iv., p. 3.

Carapace with a tooth in the middle of the posterior border, with six other teeth in a mesial longitudinal row; on each side of these a row of five tubercles armed with hooked hairs; three large teeth on the branchial region and three on the hepatic region; three teeth on the upper orbital border. Arm with a spine on its upper surface. [*Hess.*]

Sydney.

10. Halimus lævis.

Halimus lævis, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 435.

Carapace nearly smooth above; five tubercles on the gastric region; no spine on the posterior margin. Basal joint of the antennæ with a sharp tooth at its antero-internal angle and a spine at its antero-external angle. Anterior limbs very large in the male; arm with a conical tooth at the distal end of its upper

surface, and three or four smaller ones further back; wrist very strongly carinated; hand very large, swollen, smooth, with two or three very small fasciculi of hairs; fingers meeting only at their tips when closed. Posterior limbs with the penultimate joint compressed, but not truncate.

Tasmania; King George's Sound (Macleay Museum).

Sub-Genus *Microhalimus*, Haswell.

Nearly allied to Halimus, but distinguished by its small size, by having the rostrum strongly deflexed, and by having no prominent spines on the carapace.

11. Microhalimus deflexifrons. A.M.

Microhalimus deflexifrons, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 435, pl. xxv., fig 2.

Carapace nearly smooth; lateral margins with three very minute spines on the hepatic regions, three others on the branchials, a minute point towards the middle of the latter region, and another in the middle of the posterior border. Gastric region very prominent, with two small tubercles in front opposite the eyes. Rostrum obliquely deflexed, cornua slender, acute. Basal joint of external antennæ with an acute spine at its antero-external angle. Anterior limbs small in the female, larger in the male, the wrist in the latter sex with a denticulated carina, the immobile finger with a stout tooth. Penultimate joint of ambulatory limbs very slightly dilated and compressed. Carapace and limbs covered with hooked hairs.

Port Jackson.

Sub-Family Acanthonychinæ.

Eyes small and immobile or partially retractile, and concealed beneath the prominent præ-ocular spine. Basal antennal joint usually enlarged at base and narrowing distally. Post-ocular spine small or absent. [*M.*]

Genus Xenocarcinus, White.

Carapace ovate-cylindrical. Rostrum elongated, emarginate. Præ-ocular spine wanting. Eyes immobile. Antennæ concealed beneath the rostrum. Last two pairs of legs very short.

12. Xenocarcinus tuberculatus.

Xenocarcinus tuberculatus, White, Append. Jukes' Voy. "Fly," p. 36 (1847); Proc. Zool. Soc. p. 119 (1847); List Crust. Brit. Mus. p. 123 (1847); Ann. and Mag. Nat. Hist. (2) i., p. 221, (1848); Miers, Crust. "Erebus" and "Terror," p. 1, pl. ii., fig. 1; A. Milne-Edwards, Nouvelles Archives du Muséum, t. viii., p. 253.

Carapace with nine tubercles placed in three transverse lines, the central tubercle of the first line double, one placed before the other, the central tubercle of the last line also double, both placed transversely; the greater part of the beak covered with minute, closely placed hairs and scales, two short lines of longer hairs on the upper side above and before the eyes; two or three waved longitudinal lines on the posterior half of the carapace, the inner line continued before the eyes. First pair of legs (in female) short, not reaching to the end of the beak, the claws small, equal and minutely toothed. [*White.*]

Long Island, Cumberland Group.

13. Xenocarcinus depressus.

Xenocarcinus depressus, Miers, Crust. "Erebus" and "Terror," p. 1.

Carapace regularly oval in outline; upper surface flattened. Several small granules behind and between the eyes at the base of the rostrum, and irregular indistinct granulated elevations in the middle line and on either side of the carapace. Rostrum sub-cylindrical, densely pubescent, terminating in two spines and deeply excavated between them.

Cape Howe. (Brit. Mus.)

Genus HUENIA, De Haan.

Carapace in the male sub-triangular, flat; in the female with lateral lobes. Rostrum slender, deep, laterally compressed, acute. Præ-ocular spine small. Hands compressed, cristate above. Ambulatory legs more or less dilated and compressed.

14. Huenia bifurcata. A.M.

Huenia bifurcata, Streets, Proc. Acad. Nat. Sci. Philad., 1870, p. 107; Miers, Catal. Crust. N.Z., p. 3.

Carapace smooth; antero-lateral margins acute; gastric region with three low tubercles arranged in a triangle with the base forwards; cardiac region with a low tubercle. Antero-lateral borders with a sharp process on either side of the base of the rostrum, and in the female two broad processes behind, the anterior bilobed at the extremity, the posterior and larger trilobed; in the male one bilobed lateral process at the postero-lateral angle. Rostrum obliquely deflexed, bifurcate at the tip. Anterior limbs with a small tooth at the distal extremity of the third joint. Three posterior pairs of limbs, each with a small spine in the middle of the under surface of the fifth joint.

Port Jackson; Port Stephens; Port Philip. Also occurs in New Zealand.

15. Huenia proteus. A.M.

Huenia proteus, De Haan, Faun. Japon., Crust., p. 95, pl. xxiii., figs. 4-6; Adams and White, Zoology of the "Samarang," Crust., p. 31, pl. iv., figs. 4-7; Haswell, l. c., p. 437.

Lower border of the front acute. Carapace in the male elongate, with one or two lamellar lobes; front much produced, longer than the carapace. Carapace in the female expanded; sides with two lamellar projections; front scarcely exceeding in length half the rest of the carapace. Ambulatory legs with the anterior margin strongly carinate.

Torres Straits. Occurs also on the coasts of Japan and China.

Genus MENÆTHUS, Milne-Edwards.

Carapace subtriangular. Rostrum slender, acute. Præ-ocular spine well developed. Anterior legs with the palm slightly compressed, fingers arcuate. Ambulatory legs not compressed.

16. Menæthius monoceros. A.M.

Pisa monoceros, Latr., Encycl., t x., p. 139.

Menæthius sub-serratus, Adams and White, Voy of H.M.S. "Samarang," Crust., p. 18, pl. iv., figs. 1 and 2.

Menæthius monoceros, Milne-Edw., Hist. Nat. Crust., t. i., p. 339; Heller, Verhandl. der K. K. Zoologish-botan. Gesellsch. in Wien, 1861, p. 4; A. Milne-Edwards, Nouv. Arch. du Mus. t. vii., p. 252.

Upper surface of the carapace tuberculated, nearly horizontal; three tubercles on the gastric region arranged in the form of a triangle, one on each branchial region; antero-lateral borders with three irregular triangular teeth. Third joint of all the limbs armed with a few spines, those of the second pair much longer than the following.

A widely distributed tropical species, found in Australia on the coral reefs among sea-weeds.

Genus GONATORHYNCHUS, Haswell.

Carapace sub-triangular, rounded behind. Rostrum formed of two triangular, pointed, slightly divergent cornua. Third joint of external maxillipedes produced and rounded at its antero-external angle. Carpus of anterior limbs carinate in the male.

17. Gonatorhynchus tumidus. A.M.

Gonatorhynchus tumidus, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 439, pl. xxv., fig. 4.

Surface finely granulated, covered with hooked hairs which are much closer on the rostrum and over the orbit; gastric region with a few irregular smooth tubercles; hepatic regions prominent, with a few small pointed tubercles; anterior portion of the cardiac region rounded, separated, together with the urogastric region from the branchial by a broad, low, sinuous ridge, which broadens out anteriorly to form a smooth pear-shaped elevation on the inner part of the branchial region, and breaks up behind into a number of small rugæ; branchial regions dilated, each with two ovate, flattened tubercles situated close together towards the centre, and three spinous tubercles towards the lateral margin. Rostrum slightly deflexed. Upper orbital border ending behind in a minute tooth, followed by two convergent spines separated by open fissures. Basal joint of the external antennæ about twice as long as broad, concave from side to side, with a thin outer lip, slightly notched in front, more prominent behind, forming the lower rim of the orbit; a small tooth at the antero-internal angle. Arm (in the male) with a dorsal ridge; propodos slightly dilated, smooth; fingers slender, pointed, mobile finger with a large rounded tooth near its base, and a row of denticles in its distal half; immobile finger with the inner border concave proximally, with a single small tooth near the base, straight

distally and armed with a row of small denticles. First pair of ambulatory limbs longer than the body—the following pairs decreasing in length successively.

Port Jackson; Port Philip.

Family II. MAIIDÆ.

Eyes retractile within the orbits, which are distinctly defined, but often more or less incomplete below, or marked with open fissures in their upper and lower margins. Basal antennal joint always more or less enlarged.

Sub-Family Maiinæ.

Carapace usually sub-triangular. Rostrum well developed. Anterior legs in male enlarged; fingers not excavate at tips.

Genus EGERIA, Latreille.

Carapace broadly triangular, spinose. Rostrum prominent, notched. Orbits with two wide fissures below. Eyes short and thick, visible from above when retracted. Basal antennal joint rather narrow. Anterior legs of male rather small.

18. Egeria arachnoides.

Cancer arachnoïdes, Rumph.

Inachus longipes, Fabr., Supp., p. 358.

Macropus longipes, Latr., Hist. Nat. Crust., t. vi., p. 111.

Egeria arachnoïdes, Latr., Encycl., pl. cclxxxi., fig. 1; Milne-Edw., Hist. Nat. Crust., t. i., p. 291.

Leptopus longipes, Lamarck, Hist. des An. s. vert., t. v., p. 235; Latr. Règne Anim., 2e. éd., t. iv., p. 62.

Rostrum extremely short, broader than long. Carapace armed above with long spines, of which six are situated on the gastric region, one on the cardiac, one on the intestinal, and two or three on the branchial. Rostrum terminating in two small cornua. Lateral borders of the carapace armed with two or three spines. Orbits with three fissures above and one below. Anterior limbs filiform in both sexes, and armed with a small spine at the extremity of the third joint. Body covered with a brownish pubescence. [*M.-E.*]

Darnley Island, Torres Straits (Macleay Museum). A tropical species.

19. Egeria Herbstii.? **A.M.**

Cancer longipes, Herbst, pl. xvi., fig. 93.

Leptopus longipes, Guérin, Icon. Cr., pl. x., fig. 3.

Egeria Herbstii, Milne-Edwards, Crust., t. i., p. 292.

Egeria longipes, Adams and White, Zoology of the "Samarang," Crust., p. 7.

Rostrum well developed (about thrice as long as broad). Otherwise like the preceding.

Torres Straits; Port Denison (Mr. Alex. Morton); Port Molle, fourteen fathoms (W.A.H., H.M.S. "*Alert*"). A widely distributed tropical species.

Genus HERBSTIA, Milne-Edwards.

Carapace spinose, broadly triangular, with the regions well defined. Second and third joints of antennæ slender. Ambulatory legs of moderate length, slender, cylindrical.

20. Herbstia crassipes.

Micropisa crassipes, A. M.-Edw., Journ. des Mus. God., Band. i., Heft iv., p. 76.

Nearly allied to *M. violacea*, but much less spinose. Carapace much dilated behind, smooth, with the exception of a few tuberculiform eminences which exist on the gastric region, on the branchial region, and along the posterior border. Lateral borders unarmed. Orbits limited externally by a strong spine. Internal orbital angle rounded. Front formed of two rather long pointed scarcely divergent cornua. Anterior legs of the male short and smooth. Ambulatory legs short and stout. [*M.-E.*]

Bass' Straits.

Genus PARAMITHRAX, Milne-Edwards.

Carapace sub-triangular, rather convex, and more or less tubercular and spinose. Rostral spines rather long, and divergent from their base. Orbits large, with the upper margin projecting, with two deep fissures; lower margin usually incomplete or widely emarginate. Basal joint of the external antennæ large and broad, with two spines at its distal extremity, flagellum excluded from the orbit by the enlargement of the basal joint. Anterior legs in the male large; wrist with a ridge crossing obliquely its outer surface, or simply tuberculated; hands rather compressed, fingers acute.

Sub-Genus *Paramithrax*.

Anterior legs in the male enlarged, hand compressed, fingers with a vacant space at base between them when closed, wrist with two longitudinal ridges, one on the upper and one obliquely crossing the inner surface. [*M.*]

21. Paramithrax peronii.

Paramithrax peronii, M.-Edw., Hist. Nat. Crust., t. i., p. 324; Jacquinot et Lucas, Voy. au Pole Sud, Zoology, iii., Crust., p. 10, pl. i., fig. 3 (1853); Miers, Cat. Crust. N.Z., p. 5 (1876).

Carapace hairy, covered with large smooth tubercles and with spinous tubercles forming a longitudinal median series, upon the gastric, cardiac, and intestinal regions. Rostrum formed of two long spines. Four spines on the sides of the hepatic, and five on the sides of the branchial regions. Basal joint of the external antennæ terminating anteriorly in two spines, flagellum not concealed beneath the rostrum. Anterior legs very large; wrist with a strong even ridge on its external surface; hands very large, smooth; fingers acute at the extremities. Ambulatory legs hairy. Length, 2½ in.; breadth, 1¾ in. [*J. & L.*]

Australia (Brit. Mus). Also found in New Zealand.

22. Paramithrax sternocostulatus. A.M.

Paramithrax sternocostulatus, A. Milne-Edwards.

Paramithrax gaimardii, Miers, Cat. Crust. N.Z., p. 6 (1876).

Carapace covered with granules and tubercles beset with hooked hairs. Two longish spines one behind the other on the gastric region, two shorter placed transversely on the cardiac region; two acute spines close together in the middle of the posterior border; a long spine directed upwards, backwards, and outwards on the posterior branchial region; two spines in front on the lateral border of the branchial region; two short teeth on the hepatic region. Post-ocular spine truncate.

Port Jackson (common). Found also in New Zealand.

23. Paramithrax barbicornis.

Pisa barbicornis, Latr., Encycl., x., p. 141 (1825).

Paramithrax barbicornis, Milne-Edwards, Hist. Nat. Crust., t. i., p. 324 (1834); Miers, Ann. Mag. Nat. Hist. (4) xvii., p. 219 (1876), Cat. Crust. N.Z., p. 6., pl. i., fig. 2 (1876).

Carapace nearly ovoid, convex, covered with long hairs set in wart-like flattened tubercles. Rostral spines strong, triangular, acute. Orbits deeply notched above, terminated posteriorly by a small spine; two other stronger spines after the notch, the anterior the larger. Four small spines on the sides, of which the two first are obtuse, placed near to one another, the two last acute, separated. Anterior legs in the male very large; arm with a series of strong spines above; wrist with two ridges, the inner divided into several lamellate or tuberculiform lobes, the outer uninterrupted except at the base.

Australia (Paris Museum); New Zealand (Brit. Mus.).

It is possible that the specimens referred to this species by Miers and described above may, as the latter remarks, be distinct from the *P. barbicornis* of Latr. No specimens of the New Zealand species referred to *P. barbicornis* by Mr. Miers are known with certainty to have been found in Australia.

24. Paramithrax spatulifer. **A.M.**

Paramithrax spatulifer, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Carapace armed with a mesial longitudinal row of four spines; the first two conical, acute, the first longer than the second, both situated on the posterior portion of the gastric region; the third situated on the cardiac region, broad, antero-posteriorly compressed, and bifid, the last, on the posterior border broad, spatulate, heart-shaped; two long sub-acute spines on each branchial region, the anterior directed outwards, upwards, and backwards; a compressed bifid spine on the lateral border of the branchial region. Rostrum formed of two rather slender widely divergent cornua, each of which is bifurcate at the tip—the inner branch being much the smaller and sometimes bifid—and has some irregular teeth along each border. Upper orbital margin produced upwards into a bifurcate process; three post-orbital spines—the last the broadest and obliquely truncate. Basal joint of the antennæ with a tubercle at the proximal end of the outer border, a spine at its distal end, and another at the antero-internal angle. External maxillipedes with scattered granules and with a longitudinal raised granular line on the ischium. Chelipedes in the male having the merus armed above

with four compressed cristiform teeth, of which the last is broader than the rest and bifid, and four below; the carpus with two sinuous or entire crests, separated by a deep groove; the propodos smooth, slightly dilated, its digital prolongation and the mobile dactylos each with a rounded tooth at their base, and meeting only near their apices, where they are armed with a row of about half-a-dozen small teeth. Chelipedes of the female differing from those of the male in having the propodos smaller, the digits less arched and without a tooth at the base. First pair of ambulatory legs longer than the rest, as long as the carapace and rostrum; all four pairs covered with hooked hairs and with a spine at the end of the meropodite. Carapace ornamented with bunches of hooked hairs. Total length 13/16ths of an inch; breadth from tip to tip of anterior branchial spines nearly an inch.

Port Stephens, dredged in about five fathoms.

25. Paramithrax Coppingeri. A.M.

Paramithrax Coppingeri, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Carapace armed in the middle line with four spines, the first two large and placed near one another on the middle of the gastric region; the remaining two small and situated near the posterior border; between the two pairs, on the cardiac region a transversely placed pair of divergent spines, the bases of which nearly meet in the middle line. Two prominent spines directed upwards, backwards, and outwards on each branchial region. Rostral cornua very long, slender and slightly knobbed and incurved at the extremity. Upper orbital border with three straight acute spinous teeth, behind which are two post-orbital spines separated by deep fissures from one another and from the upper orbital border; the posterior spine the larger, broad, compressed, and obliquely truncate. A prominent, sometimes sub-bifid tooth behind this on the border of the hepatic region. Basal joint of the external antennæ with a short tooth at the proximal end of its outer border, with a very prominent compressed tooth directed outwards at the distal end of the same border, and a third, somewhat smaller, directed downwards and forwards at the inner and distal angle; flagellum longer than the cornua of the rostrum. Merus of chelipedes armed above

with four compressed teeth of which that situated at the distal end is very prominent; carpus with two denticulated crests. First pair of ambulatory legs a little longer than the chelipeds; all the ambulatory legs armed at the extremity of the merus with a long, slender, cylindrical spine which (like the spines of the carapace) is slightly knobbed at the apex. Length one inch.

Port Molle, Whitsunday Passage. (W.A.H., H.M.S. "*Alert.*")

This species belongs to the same section of the genus as *P. aculeatus*, *P. longispinus*, *P. spatulifer*, *P. acanthonotus*, *P. verrucosipes*, and *P. halimoides;* its nearest ally being *P. longispinus*, De Haan, from which it is distinguished by having none of the supra-orbital spines recurved. In the structure of the antennary region it approaches *Chlorinoides*, mihi, but like the rest of the species mentioned has the ambulatory legs much shorter than in that genus.

Sub-Genus *Leptomithrax*, Miers.

Anterior legs in the male elongated, slender, hand and wrist sub-cylindrical, fingers meeting along their inner edges when closed; wrist simply granulated, without longitudinal ridges.

26. Leptomithrax australiensis.

Leptomithrax australiensis, Miers, Ann. and Mag. N. H. (4) xvii., p. 220.

Resembling generally *L. longimanus*, but with the carapace covered with small spinules, and with three or four larger spines upon the branchial regions. Anterior legs shorter; hand slightly compressed and granulous at the base; palm about as long as the wrist. Whole animal covered with short stiff hairs, curled at the tips. [*M.*]

Tasmania (Brit. Mus.).

27. Leptomithrax spinulosus. **A.M.**

Leptomithrax spinulosus, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 441, pl. xxv., fig. 3.

Carapace much longer than broad, covered with short spinules and hooked hairs. Lateral margins with eight pointed spines, the first two close together, separated by a wide interval from the third. Posterior border with two short spines. Rostrum of

two acute, divergent spines, the points slightly bent outwards. Postocular spine acute, with two accessory spinules on its posterior margin. Basal joint of the antennæ ending in two very long pointed spines; a row of tubercles on its outer border. Arm covered with short spinules above, with two rather longer spines, one on the distal end, the other towards the middle; wrist covered with small tubercles, hand compressed, smooth; much dilated in old individuals.

Tasmania (Australian Museum); King George's Sound (Macleay Museum).

Genus CHLOROLIBINIA, Lockington.

Carapace triangular, the spines coalescent at base and divergent at tip. Orbits shallow and open, upper orbital margin prominent; eyes short and thick. Basal antennal joint moderately enlarged. Ambulatory legs very long and slender.

28. Chlorolibinia gracilipes. A.M.

Chlorolibinia gracilipes, Miers, Ann. and Mag. Nat. Hist. (5) xix., p. 7, pl. iv., fig. 4.

Carapace sub-pyriform, smooth and spinose above, the spines disposed as follows:—four in the middle line, of which two are on the gastric, one longer on the cardiac, and one strong curved spine upon the posterior margin; two strong spines on the branchial regions above, and below them four small blunt spines above the bases of the ambulatory legs. Posterior margin of the carapace produced, forming a thin edge. A spine on the pterygostomian region and one at the antero-lateral angles of the buccal cavity. Rostrum with the spines coalescent at base, divergent in their distal half. Upper orbital margin prominent, divided by a narrow fissure. Anterior legs small, slender, smooth. Ambulatory legs long and slender, with distant tufts of curled hairs.

New Guinea? (H.M.S. "Herald"); Cape Grenville (Macleay Museum); Port Molle, fourteen fathoms (W.A.H., H.M.S. "*Alert*").

Genus CHLORINOIDES, Haswell.

Carapace sub-triangular, armed with long spines. Rostrum consisting of two long slender divergent cornua. Eyes retractile;

orbits open below, with two fissures above. A long curved supro-orbital spine. Basal joint of the antennæ with a spine at its antero-external angle. First pair of legs slender, as long as the carapace; second pair more than twice as long as the first, following pairs shorter than the second.

29. Chlorinoides tenuirostris.

Chlorinoides tenuirostris, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 443, pl. xxvi., fig. 1.

Carapace armed in the middle line with a row of four long pointed spines, of which two are on the gastric region and two on the cardiac; ten shorter spines or tubercles on the lateral portions of the gastric region; five more or less prominent spines on the hepatic and pterygostomial regions—one close to the anterior angle of the buccal orifice; three longer and four shorter spines on the branchial region, a tubercular eminence towards its posterior boundary. Rostral cornua slender, acute, divergent from their base, two-thirds of the length of the carapace. Spine at the antero-external angle of the base of the antennæ prominent, sub-acute; a compressed blunt spine situated below the orbit, arising from the base of the antennæ; another much shorter immediately on the outer side of the orifice of the green gland. Anterior legs as long as the carapace, slender, sub-cylindrical; third joint with a small spine at the distal end of its upper surface; hand very slightly dilated in the male. Second pair nearly two and a half times as long as the carapace and rostrum; third joint in this and the following pairs with a prominent acute spine above at the distal extremity. Abdomen tuberculated.

Darnley Island, Torres Straits (Macleay Museum).

Genus Micippoides, A. Milne-Edwards.

Carapace sub-triangular. Spines of rostrum rather short, deflexed, acute. No præ-ocular spine. Basal joint of the antennæ enlarged, without spine or tubercle at its distal end. Anterior legs in the male with the palm dilated. Ambulatory legs of moderate length.

30. Micippoides longimanus. **A.M.**

Micippoides longimanus, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 444, pl. xxvi., fig. 5.

Carapace elongate-triangular, gastric region dilated, armed with eight tubercles, of which two are in the middle line behind, (the last spiniform) and six (smaller), paired, in front; cardiac region prominent, with two or four large tubercles placed close together; two prominent flattened tubercles on the posterior margin, a short spine in the middle line immediately in front of these, and forming with them an equilateral triangle; branchial regions dilated, with a few low tubercles. Rostrum inclined obliquely downwards, more strongly deflexed in the female than in the male—consisting of two rather short, triangular, pointed cornua. Orbits with a single broad fissure above, separating the upper orbital margin from the post-ocular spine. Basal joint of the antennæ broad, divided by a narrow mesial furrow, bilobed at the extremity. A flattened prominence of irregular outline on the sub-hepatic region, and two smaller ones behind, one on the pterygostomial region, and the other on the margin of the branchial region above the insertion of the first pair of limbs; a fourth small circular and flattened projection immediately external to the base of the antennæ. Anterior limbs very large in the male, more than once and a half the length of the rostrum, smaller in the female; arm with a few scattered tubercles; wrist with two irregular keels above in both sexes; hand compressed, longitudinally furrowed; fingers about half the length of the hand, meeting only near their tips, leaving a narrow interspace. Second pair of legs as long as the carapace, following pairs decreasing in length. Abdomen and ambulatory limbs covered closely with short hairs.

Port Jackson.

Genus Hyastenus, White.

Carapace triangular, rounded behind. Spines of rostrum long, divergent. Supra-ocular spine small or obsolete, directed outward with a fissure above and below. Orbits small. Basal joint of external antennæ rather long, without spines at the distal extremity. Anterior legs in the male unarmed, not nearly

so long as the first pair of ambulatory legs, which are longer than any of the succeeding.

This genus ought probably to be united with Naxia.

31. Hyastenus diacanthus. A.M.

Pisa (Naxia) diacantha, De Haan, Crust. Jap., p. 86, pl. xxiv., fig. 1 (1839).

Hyastenus diacanthus, A. Milne-Edwards, Nouv. Arch. du Mus., t. viii., p. 250; Miers, Cat. Crust., N.Z., p. 9 (1876).

Hyastenus verreauxii, A. Milne-Edwards, l. c., p. 250.

Carapace triangular, rather convex. Rostral spines long and slightly divergent. Gastric region very convex, in young specimens almost tuberculated. Antero-lateral margins long, straight, unarmed, terminating posteriorly in a strong spine, directed outward and placed on a level with the back of the branchial regions, Anterior legs in the male strong; hand rather compressed. Whole surface covered with stiff, curled hairs. [*M.*]

Port Jackson; Port Denison; Torres Straits. Found also in New Zealand, the Philippines, and Japan.

32. Hyastenus oryx. A.M.

Hyastenus oryx, A. Milne-Edwards, Nouv. Arch. du Mus., t. viii., p. 250, pl. xiv., fig. 1.

Carapace little dilated, slightly pyriform and swollen above. Rostrum formed of two long, slender, pointed, divergent cornua. Orbit large with a wide fissure above. Gastric region convex, ornamented with three tubercles in the middle line, and two pairs behind with four less distinct on each side. Cardiac and branchial regions with numerous tubercles. Surface yellow, marked with spots of bright red, covered with very short, scattered brownish hairs. [*A. M.-E.*]

Torres Straits; Port Denison. Found also in New Caledonia.

Genus Naxia, Milne-Edwards.

Hardly to be regarded as a distinct genus from the preceding.

33. Naxia serpulifer. **A.M.**

Pisa serpulifer, Guérin, Icon. Crust., p. viii., fig. 2.

Naxia serpulifer, Milne-Edwards, Hist. Nat. Crust., t. i., p. 313.

Carapace tuberculated above, rounded behind, much contracted in front. Rostrum large, and formed of two cylindrical cornua, truncate at the apex and each terminating in two strong spiniform teeth. Anterior angle of the superior orbital border occupied by a thick triangular tooth, a similar tooth on the pterygostomial and branchial regions. First pair of legs in the male as long and stouter than the second; second pair nearly once and a half the length of the following pairs; in the female the first pair much shorter than the second, and the latter scarcely longer than the following pairs. [*M.-E.*]

Port Essington (Macleay Museum); Thursday Island, Torres Straits. (W.A.H., H.M.S. "*Alert*."

Sub-Family Schizophrysinæ.

Carapace very broadly triangular, or oval, or nearly circular. Rostrum very short or obsolete. Anterior legs in the male small, slender; the fingers usually excavated at the tips. [*M.*]

Genus Cyclomaia, Stimpson.

Carapace orbiculate or oblong-orbiculate, spines of rostrum simple, rudimentary. Orbits large. Basal joint of antennæ very broad, with three spines at its distal end. Anterior legs with the fingers excavated at the tips.

34. Cyclomaia margaritata. **A.M.**

Cyclomaia margaritata, A. Milne-Edwards, Nouv. Arch. du Mus., t. viii., p. 236, pl. x., figs. 2 and 3 (1872).

Carapace orbicular, as broad as long, regularly convex, covered with regularly disposed tubercles. Front broad, little prominent, formed of two median short and obtuse points, and of the internal orbital angles. Orbits deep, their upper border with two fissures. Lateral borders armed with six short, thick, granular teeth (including the external orbital angle), the second bifid. Basal joint of the antennæ armed with three short spines. Anterior limbs dilated, the hand smooth, the fingers arched; arm

and carpus covered with granulations. Ambulatory limbs stout, one or two rows of pointed tubercles on the third and fourth joints. [*A.M.-E.*]

Abrolhos, Western Australia (Macleay Museum). Found also in New Caledonia, and the Sandwich and Viti Islands.

Genus SCHIZOPHRYS, White.

Carapace orbiculate triangular or rarely elongated. Spines of rostrum distinct, with one or more accessory spines upon their outer margins. Orbits large. Basal joint of antennæ rather slender, with two spines at its distal end. Fingers of anterior legs excavated at the tips. [*M.*]

35. Schizophrys aspera.

Mithrax aspera, Milne-Edwards, Hist. Nat. Crust., t. i., p. 320.

Dione affinis, De Haan, Faun. Jap., Crust. p. 94, pl. xxii., fig. 4.

Mithrax spinifrons, A. Milne-Edwards, Ann. Soc. Ent. France, 4e série, t. vii., p. 262, (1867).

Schizophrys aspera, Stimpson, Amer. Acad. of Sci. and Arts, January, 1860; A. Milne-Edwards, Recherches sur la faune carcinologique de la Nouvelle Calédonie, Nouv. Arch. du Muséum, t. viii., p. 231, pl. x,, fig. 1.

Carapace covered with granulations which are larger and more acute on the more prominent regions of the carapace. Cornua of the rostrum usually twice as long as broad, each generally terminating in two points, the outer shorter than the inner, rarely simple, sometimes with an additional spinule. Lateral borders armed with six sub-equidistant, strong spines, with a smaller spine behind on the branchial region. A small triangular tooth in the middle of the lower orbital border.

Torres Straits (Macleay Museum). A widely distributed tropical species.

Genus PLEUROPHRICUS, A. Milne-Edwards.

Carapace nearly circular, little convex. Front prominent, orbits large. Lateral borders regularly curved, ornamented with teeth. Antennary region narrow, basal joint of the external antennæ enclosed. Antennules folding up very obliquely in the

deep and narrow fossæ. Epistome very small and not distinctly limiting the buccal orifice. Merus of the external maxillipedes much dilated and rounded externally, profoundly excavated internally for the insertion of the flagellum. Fingers spoon-excavate. Abdomen of the male divided into seven joints. [*A. M.-Edw.*]

36. Pleurophricus cristatipes.

Pleurophricus cristatipes, A. M.-Edwards, Journ. des Mus. Godeffroy, Band i., Heft iv., p. 34, pl. i., fig. 6.

Carapace strongly mammillated, smooth and glabrous. Cardiac region surmounted by a conical eminence; gastric region with a few tuberosities. Front prominent, narrow, with sinuous borders. Orbits widely open. Lateral borders with five strong distant teeth, of which the first, constituting the external orbital angle, is inconspicuous; and the last is the smallest. Posterior border ornamented with five flattened tubercles of which one occupies the median line. Chelipedes compressed, ornamented with rounded eminences. Ambulatory legs short, the merus large, compressed and surmounted by an unequal crest. [*A. M.-E.*]

Australia (Museum Godeffroy).

The position of this genus is doubtful. Mr. Miers regards it as finding its true place among the *Oxystomata*.

Sub-Family Micippinæ.

Carapace sub-oblong. Rostrum vertically or nearly vertically deflexed, usually broad, lamellate. Anterior legs with the fingers acute at tips. Basal antennal joint very much enlarged. Eye-peduncles very long, geniculated, and laterally projecting. [*M.*]

Genus Micippa, Leach.

Rostrum nearly vertically deflexed. Orbits of a narrow oval form, well-defined. Basal antennal joint much enlarged. Anterior legs in the male with the palm elongate and rather slender; fingers meeting along their inner edges when closed. [*M.*]

37. Micippa parvirostris. A.M.

Micippa parvirostris, Miers, Ann. and Mag. N. H., (5) Vol. iv., p. 13, pl. iv., fig. 9.

Carapace triangulate-oblong, narrowing anteriorly; its whole surface covered with close-set but very prominent granules, which tend to become small spinules; rostrum composed of two very small, truncated, sub-vertically deflexed spines. Lateral margins armed with six spines, including the postocular, which is bifid. The sides of the body, beneath the lateral spines granulated. Eye-peduncles very long, compressed, with a small blunt tooth on their anterior margins. Basal antennal joint with a very small spine at its antero-external angle.

Port Lincoln; Port Philip; Port Jackson.

38. **Micippa spatulifrons.**

Micippa spatulifrons, A. Milne-Edwards, Nouv. Arch. du Mus., t. 8., p. 240, pl. xi., fig. 3; Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 445.

Rostrum very obliquely deflexed, contracted at the base, and dilating gradually towards the extremity, terminating in four points of which the two median are directed downwards, and the two lateral outwards. Superior orbital border with two shallow fissures behind, its external angle forming a triangular tooth. Basal joint of the external antennæ smooth, its outer border nearly straight. Carapace flattened, strongly depressed on each side of the gastric region, covered with granulations, but without points or spines. Lateral borders nearly straight, ornamented with flattened tubercles or irregular denticles; a very small spine on the posterior branchial region. Posterior border with a row of close-set tubercles.

Cape Grenville (Macleay Museum). Found also in New Caledonia.

39. **Micippa inermis.** A.M.

Micippa inermis, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 445, pl. xxvi., fig. 3.

Carapace uniformly tuberculated. Rostrum nearly vertically deflexed, with a deep longitudinal mesial furrow; ending in two sub-triangular horns curved slightly outwards and separated by a wide triangular notch. Upper orbital border very prominent, ending behind in a blunt spine; fissures of the upper orbital margin deep. Lateral borders of carapace with a row of short

spinous tubercles. Anterior legs (in the female) slender, smooth, about equalling in length the post-frontal region of the carapace; fingers slender, sub-cylindrical, slightly curved, meeting only towards their tips when closed. Ambulatory limbs stout, decreasing in length posteriorly, each with a small tooth at the extremity of the upper surface of the third joint. Body all covered, with the exception of the anterior legs, with long soft hair. Length fourteen lines; breadth one inch.

Gloucester Passage, Queensland; Port Denison (W. A. H., H.M.S. "*Alert*").

40. Micippa superciliosa.

Micippa superciliosa, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 446, pl. xxvi., fig. 2.

Carapace granular, hepatic regions depressed. Rostrum nearly vertically deflexed, terminating in four teeth, the inner pair triangular, sub-acute, separated by a wide interval, the outer rather longer, directed forwards and outwards, acute, curved backwards at the tips. A short triangular, præ-ocular tooth; upper orbital bord produced, almost tubular; orbital fissures shallow, the first narrow, the second open. Lateral borders armed with six slender spines which increase in length posteriorly. Anterior limbs (in male) as long as the body; wrist and hand covered with minute granules arranged for the most part in irregular transverse rows; hand somewhat dilated; fingers smooth, meeting only near their apex, leaving an oval interspace between them at the base. Length seven lines; breadth (exclusive of the spines) half an inch.

Darnley Island, Torres Straits (Macleay Museum).

In the form of the orbits this species shows a transition towards *Criocarcinus*.

41. Micippa curtispina. A.M.

Micippa curtispina, Haswell, Proc. Linn. Soc. N.S.W. Vol. iv., p. 446, pl. xxv., fig. 1.

Carapace granular; gastric and anterior portion of cardiac regions much elevated towards the middle line; posterior portion of the cardiac region with a low mammiform elevation bounded behind by a narrow semi-circular groove; hepatic regions much

depressed; an obscure pointed tubercle about the middle of the lateral margin; postero-lateral and posterior margins with five small teeth on each side. Rostrum quite perpendicularly deflexed, the apex slightly inflexed, terminating in four rounded lobes, the two internal narrower and projecting further forward than the two external, separated from one another by a triangular interval, and from the outer pair by a shallow open sinus. Orbital fissures linear. Anterior limbs very small, the arm carinated above, the carina armed distally with two acute teeth; wrist and hand smooth—the latter compressed, fringed with hairs, the third joint with sharp minutely toothed anterior and posterior borders. Length five lines; breadth four lines.

Port Denison, five fathoms.

42. Micippa spinosa. A.M.

Micippa spinosa, Stimpson, Proc. Acad. Nat. Sci. Philad., p. 218 (1857).

Paramicippa spinosa, Miers, Cat. Crust. N.Z., p. 9 (1876); Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 447.

Carapace depressed, unequal above, closely tuberculated and setose. Dorsal spines few, long, slender, obtuse at apex, three in the median line, of which two are upon the gastric, and one, largest, upon the cardiac segion. A large spine upon the branchial region, between which and the post-orbital tooth are nine spines on the lateral margin. Posterior margin spinulose. Rostrum dilated at the extremity, with the margins broadly rounded, margin crenulate, two median divergent teeth. Orbits bi-fissate above, the inner fissure shut, the outer open. Pterygostomian region convex and tuberculated, not setose. Anterior legs very small, hand and wrist obsoletely granulated. Ambulatory legs compressed, densely pilose, third joint with a small terminal spine above. [*St.*]

Port Jackson; Port Stephens. A very common species; said to occur also in New Zealand.

43. Micippa affinis.

Micippa affinis, Miers, Ann. and Mag. Nat. Hist. (5), iv., p. 13.

Carapace sub-oblong, deeply concave on the hepatic regions, surface uniformly and evenly granulated; on the gastric regions

two, somewhat larger, granules, placed one behind the other, and followod by one on the cardiac region; there is also one on each branchial region; the lateral and posterior margins are granulated; the fissures of the upper orbital margins are very small; the rostrum is broad, spatulate, obliquely deflexed, with a small triangular notch at its distal end, and with its antero-lateral angles rounded, without teeth or spines. The anterior legs (in the female) are very small and smooth; the ambulatory legs are densely hairy. Length about six lines. [*M.*]

Bass' Straits (H.M.S. "*Challenger*").

Family III. PERICERIDÆ.

Eyes retractile within the small circular and well defined orbits, which are never incomplete as in the *Maiidæ*. Basal antennal joint well-developed, and constituting the greater portion of the inferior wall of the orbit, usually considerably enlarged.

Sub-Family Pericerinæ.

Carapace more or less sub-triangular in shape. Rostrum well-developed. Second joint of antennæ not dilated. Anterior legs with the fingers acute at the tips.

Genus TIARMIA, Dana.

Carapace sub-triangular, without a distinct series of lateral spines. Spines of rostrum very slender and contiguous. Inter-orbital space broad. Basal joint of the antennæ broad at the apex but unarmed. Anterior legs in male with the palm short; fingers gaping. Ambulatory legs nodose or spinose.

44. Tiarinia mammillata. A.M.

Tiarinia mammillata, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 448.

Carapace sub-triangular, broad behind, ornamented above with pointed and mammiform tubercles, a cross formed by six of these on the gastric region; cardiac region with a prominent eminence crowned by three rounded tubercles placed close together. Cornua of the rostrum about half of the length of the post-frontal region of the carapace, slender, pointed, contiguous throughout their length. Orbit with a prominent pointed, slightly curved

spine above and in front, and a compressed spine behind. Anterior legs in the male as long as the post-frontal region of the carapace; third joint with four small teeth on its upper surface, the terminal one rather longer than the others; hand compressed, smooth; fingers half the length of the hand, inner edges armed with teeth in their distal half. Second pair of legs a little longer than the first pair; third joint armed above with a row of half-a-dozen small tubercles; third joint of the two following pairs with two or three tubercles; that of the last pair smooth.

Port Darwin (Macleay Museum); Woodlark Islands (Australian Museum).

45. Tiarinia spinosirostris.

Tiarania sp.? Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 448.

Carapace ornamented above with numerous mammiform tubercles which become elongated into short spines towards the lateral and posterior borders. Rostral cornua long, closely approximated in the greater part of their length, divergent at the tips, each armed externally with three acute spines projecting outwards and slightly forwards—the central one the longest. Upper orbital margin with a curved sub-acute spine at its anterior extremity. Anterior legs having the arm ornamented with a row of five prominent tubercles on its upper border, an irregular row of small flattened tubercles on its outer surface, and two or three on the under surface; wrist and hand smooth; fingers meeting throughout nearly their whole extent, toothed, spoon-excavate. Third joints of the ambulatory limbs ornamented above with prominent tubercles; fourth joint of the first pair with a short tooth at its anterior and distal angle, that of the following pairs each with four low tubercles above.

Cape Grenville; Darnley Island, Torres Straits (Macleay Museum.)

46. Tiarinia cornigera.

Pisa cornigera, Milne-Edwards, Hist. Nat. Crust., t. i., p. 335; Adams and White, "Samar." Crust., p. 18.

Rostral cornua styliform, parallel and contiguous throughout all their length. Carrapace covered on its borders, as well as below, with more or less pointed tubercles, dilated and rounded behind. Teeth of the anterior angle of the superior orbital border, small, pointed and recurved. Basal joint of the external antennæ armed with a terminal spine; second joint enlarged towards the extremity, and scarcely longer than the third. Legs ornamented with tubercles or spines on their third joint: those of the second pair in the male once and a half as long as the following pairs.

Port Darwin (Macleay Museum). Found also in the Indian Ocean.

47. Tiarinia elegans.

Tiarinia elegans, Haswell, Proc. Linn. N.S.W., Vol. vi.

Carapace elongate-triangular. Surface pitted, especially on the branchial and cardiac regions; gastric region with several small tubercles, the largest situated in the middle line near the posterior boundary of the region, laterally compressed, sub-acute; cardiac region with a prominent conical elevation; branchial regions each with two conical prominences with a small tubercle in front of them, placed in an oblique line. Rostrum forming about one-third of the length of the entire carapace, formed of two slender cornua which are contiguous to near the apex, where each curves outwards and ends in an acute point. Upper orbital margin not prominent. Arm punctate, with a few tubercles above and below; hand punctate, compressed, with a tooth above the articulation with the wrist. Fingers widely gaping, meeting only at their tips. Ambulatory legs long and slender, with a few scattered tubercles on the third joints. Length 9/16ths inch; greatest breadth 5/10ths inch.

Off Broughton Islands, near Port Stephens, dredged in twenty-five fathoms.

Sub-Family Mithracinæ.

Carapace broadly triangular, sometimes transverse, with the sides slightly arcuate; interorbital space narrow. Rostrum short or obsolete. Second joint of antennæ not dilated. Anterior legs with the fingers excavated at the tips. [*M.*]

Genus PARATHOË, Miers.

Carapace triangular, rounded behind. Front very small and narrow, truncated or notched. Basal antennal joint narrow, longer than broad, and without any spine at its distal end. Anterior legs with the palm dilated and the fingers arcuate, meeting at the tips. Ambulatory legs not dilated and compressed. [*M.*]

48. Parathoë rotundata.

Parathoë rotundata, Miers, Ann. and Mag., Nat. Hist. (5) iv., 19, p. 16, pl. v., fig. 2.

Carapace sub-triangular, rounded behind and indistinctly tuberculated; the gastric and cardiac regions distinctly defined and nearly smooth; four or five indistinct rounded elevations on the branchial regions, and two tubercles on the posterior margin. Rostrum very small, little prominent and notched at its extremity. Anterior legs in the male robust; arm and wrist smooth; palm enlarged, smooth and compressed; fingers arcuate, and meeting only at the tips, which are excavated. On the inner margin of the mobile finger near its base. is a small tubercle. Ambulatory legs robust, with the merus joint strongly tuberculated. The rather narrow basal antennal joint unarmed at its distal end. Post-abdominal segments smooth and distinct. [*M.*]

Port Curtis (H.M.S. "Herald"). Found also at Fiji.

Family IV. PARTHENOPIDÆ.

Eyes usually retractile within the small circular and well-defined orbits; the inferior wall of the orbit is cotinued to within a very short distance of the front. The antennæ are very slender, the basal joint does not as in the *Pericerida* constitute a great part of the inferior orbital margin, but is very small, and usually does not reach to the front, and with the next joint occupies the narow hiatus intervening between the front and the inner orbital angle.

Sub-Family Parthenopinæ.

Carapace equilaterally or transversely triangular or elliptical. Rostrum simple. A strongly marked depression separating the branchial from the cardiac and gastric regions. Anterior legs greatly developed with the palm trigonous; fingers acute. [*M.*]

Genus Lambrus, Leach.

Carapace equilaterally triangular, with the regions convex, tuberculated. Basal antennal joint short and not reaching to the front, the inner orbital hiatus usually occupied by the second joint, which is longer than, or as long as the first. Anterior legs with a tuberculated or spinose crest along the upper margin of the palm. Anterior legs usually very long. Ambulatory legs very short, smooth or minutely spinose.

49. Lambrus longimanus. ?

? Cancer longimanus, female, Linn. Mus. Lud. Ulr., p. 441 (1764); Syst. Nat. p. 1047 (1766).

Lambrus longimanus, Leach, Linn. Trans., t. ii., p. 310; Desmarest, Cons., p. 85; Milne-Edwards, Hist. Nat. Crust., tome i., p. 354 (1834); Miers, Ann. and Mag. Nat. Hist. (5th series) Vol. iv., No. 19, p. 20 (1879).

Carapace depressed, much broader than long, with shallow concave interspaces between the regions, and covered with small conical acute tubercles; the spines of the lateral margins are conical and scarcely longer than those of the surface of the body. Rostrum very small, acute, with a spine on each side of the median one; inter-ocular space smooth, concave. Anterior legs greatly elongated; arm spinulose above and on its anterior margin; on the posterior margin are seven longer spines, alternating with smaller ones. Wrist minutely tuberculated above, with six or seven alternately larger and smaller spines on its posterior margin; hand spinulose or tuberculate above, its anterior margin with fifteen to eighteen compound or branching spines, which increase in size towards the distal extremity; posterior margin with five to eight longer, alternating with smaller spines; under surface of arm and wrist nearly smooth, of hand minutely granulated or tuberculate. Spinules of the merus joints of the ambulatory legs very small. Penultimate joint of the post-abdomen of the male armed with a spine or tubercle. [*Miers.*]

Torres Straits; Port Denison. A widely distributed species.

50. Lambrus turriger.

Lambrus turriger, Adams and White, Zoology of the "Samarang," Crust., p. 26, pl. v., fig. 2, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 449.

Carapace longer than wide, five-sided, rather produced and acuminated in front. Upper surface with four elevated spines, rather thickened and blunt at the ends, the first about midway between the fore and hind part of the carapace, directed upwards and slightly backwards; behind it another spine much longer and one on each side of this, on the hind margin of the carapace; in the middle, two spines directed upwards and slightly backwards; the first and second spines from before backwards, moderate in length; the third placed in the centre of the carapace, long, vertical, and rather sharp-pointed; the spines situated in the raised prominent tuberosity of the branchial region, long, stout, erect, and directed a little outwards and backwards; entire surface of the carapace covered with blunt, sub-conical tubercles. Breadth of carapace about four lines, length about four lines and a half. Front small, depressed very considerably, rather short, somewhat obtuse, deeply concave in the middle, with a slight tooth on each side. Fore-legs very long in comparison with the rest of the body, verrucose or covered with warty tubercles, which latter are smooth, rounded on the sides, and more spinous on the angular crests. Hind-legs very slender and smooth, rounded above and below, with the claws long, fine, slightly flattened and very sharp. [*Adams and White.*]

Darnley Island, Torres Straits (Macleay Museum). Found also in the Philippines.

51. Lambrus harpax. **A.M.**

Lambrus harpax, Adams and White, Zool. of the "Samarang," Crust., p. 25, pl. vi., fig. 3. Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 450.

Carapace sub-triangular, smooth, rounded in front, carinated in the middle, the keel armed with three rounded tubercles, and forked anteriorly leaving a depressed triangular interval; lateral edges rather conspicuously crenated, the crenations flattened and rounded; latero-posterior angles ending in a flattened triangular, rather obtuse, spiny process; hind part of the carapace with a

strong spine directed backwards and outwards, slightly tuberculiferous, and continued in a strong ridge upon the posterior portion of the branchial region; another smaller spine situated nearer the middle line, likewise strongly carinated, leaving a depressed space between it and the former spine; three small tubercles in the median line, one central and one on each side. Front but little produced, rounded anteriorly, with the margin slightly denticulated. Fore-legs about twice the length of the carapace; third and fourth joints with the edges armed with rounded tubercles. [*A. and W.*]

Torres Straits; Port Denison; Albany Passage (W. A. H., H.M.S. "*Alert*"). Occurs also on the coasts of China and Borneo.

52. **Lambrus hoplonotus.**

Lambrus hoplonotus, Adams & White, Zool. of the "Samarang," Crust., p. 35, pl. vii., fig. 3; A. Milne-Edwards, Nouv. Arch. du Mus., t. viii., p. 258; Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 450.

Carapace sub-triangular, anteriorly acuminate, somewhat angulated at the sides, wide behind, covered with rounded, equal sized tubercles, larger in the middle and branchial regions; the sides anteriorly crenated, armed in the middle with thick obtuse tuberculiform processes, and ending posteriorly in a long prominent acuminated spine directed outwards and a little backwards; posterior edge with eight strong spines and tubercles, the spines fringed with long, rigid, slightly curved hairs. Front acuminately triangular, the edges sub-crenulated and a strong spine above the orbit. Fore-legs three times longer than the carapace, the third joint with a row of equal-sized tubercles anteriorly; four or five large rounded tubercles slightly separated from each other on the outer surface; five strong spiny processes, extending backwards and outwards from the hinder margin; the third joint with a row of tubercles above and three strong spines externally; the fifth joint with a crest of strong spines above, a row of tubercles internally and a row of about twelve thick, obtuse spines on the lower sharp edge. [*A. & W.*]

Darnley Island, Torres Straits; Cape Grenville (Macleay Museum). Albany Passage; Port Molle (W. A. H., H.M.S. "*Alert*").

53. Lambrus affinis.

Lambrus affinis, A. Milne-Edwards, Nouv. Arch. du Mus. t. viii., p. 261, pl. xiv., fig. 4.

Carapace narrow and very convex; front broad, lamellate, triangular, depressed in the middle line. Gastric, cardiac and branchial regions tuberculated; depressed portions of the carapace without tubercles. Frontal and hepatic regions smooth. Lateral border of the hepatic region scarcely sinuous, that of the branchial region with about six flattened, closely approximated teeth. Arm and hand with rounded, sometimes dentiform tubercles on their borders. Ambulatory legs smooth. [*A. M.-E.*]

Port Darwin (Macleay Museum).

54. Lambrus nodosus. A.M.

Lambrus nodosus, Jacquinot et Lucas, Voy. au Pole Sud, Zool. iii., p. 13, pl. i., fig. 2. (1853); Miers, Cat. Crust. N. Z., p. 12 (1876); Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 451 (1879).

Carapace longer than broad, rounded on the sides, obscurely tuberculated upon the gastric, cardiac, genital and intestinal regions, and on the external margins of the branchial regions. Rostrum prominent, terminating in a blunt spine. Anterior legs very long, with large tubercles on the upper and outer margins; mobile finger with large tubercles at its base. Ambulatory legs slender, smooth. Penultimate segment of the abdomen with a strong tubercle.

Port Denison. Said also to have been found in New Zealand.

55. Lambrus spinifer. A.M.

Lambrus spinifer, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 451, pl. xxvii., fig. 1.

Carapace deeply sulcated, armed with four prominent spines in the middle line, one on the gastric region and three on the cardiac; two short spines on the posterior margin; hepatic regions with an angulated, tuberculated marginal ridge separated by a deep groove from the posterior part of the lateral margin of the carapace, and continuous in front with a slight longitudinal ridge running forwards to the outer angle of orbit; lateral margin of the carapace with a row of seven flattened, slightly serrated teeth, generally increasing in length posteriorly; postero-lateral

margin with two prominent spines, of which the anterior is the larger; a prominent spine about the middle of the branchial region; infero-branchial region armed anteriorly with a row of about nine short blunt, serrated teeth, and behind with a prominent flattened tooth situated behind the insertion of the anterior legs, and a tuberculated ridge just above the base of the ambulatory legs. Front obliquely depressed, prominent, ending in one mesial, longer, and two lateral, shorter, teeth. Anterior legs two and a half times the length of the carapace and rostrum; a row of seven to twelve conical or compressed teeth on the anterior margin of the arm, four or five conical teeth or more elongated spines on its upper surface, and three more or less prominent spines on its posterior border; hand with a row of four to six larger, and four to five smaller, triangular spines on its outer border, and about ten of similar shape on its inner; fingers stout, only slightly crossed at the tips when closed. Posterior limbs having the third, fourth, and fifth joints armed above with a toothed ridge, most prominent on the third joint, which is armed also below with two rows of small tubercles. Length 1¼ inch.

Darnley Island, Torres Straits; Cape Grenville (Macleay Museum); Port Denison; Port Molle, fourteen fathoms; Port Curtis (W. A. H., H.M.S. "*Alert*").

56. Lambrus calappoides.

Parthenope calappoides, Adams and White, *l. c.*, p. 34, pl. v., fig. 5; Haswell, *l. c.*, p. 452.

Carapace sub-triangular, truncate behind, rounded in front; upper surface covered with wart-like, rather depressed, tubercles; sides at the fore-part with an obtuse rounded lobe, behind which is a deep notch; branchial regions very much developed, covered with tubercles, with a ridge of larger tubercles extending to the latero-posterior angles, and deeply incised at short, regular intervals round the edges; the middle region with a row of large rounded tubercles, the anterior of which are close together, and the posterior isolated; two hollows between the lateral and middle regions, and two deep pits behind the hollows. Front wide, obtuse, rounded anteriorly, slightly emarginate at the end, faintly dentated on the sides, and tuberculiferous on the upper surface. Fore-legs rather short and stout; third joint verrucose,

with a strong anterior spiniferous crest, fourth joint smooth externally, with a row of tubercles on the inner surface; fifth joint with a row of large tubercles, extending from the upper claw to the base of the joint, on the inner surface; outer keel smooth and without spines. [*A. and W.*]

Darnley Island, Torres Straits (Macleay Museum).

57. **Lambrus Sandrockii.** A.M.

Lambrus Sandrockii, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 452, pl. xxvii., fig. 2.

Carapace sub-triangular in outline, ornamented with circular tubercles which are more numerous in the central regions, where they are covered with minute granules; fewer and smooth on the branchial regions; spaces between the tubercles punctate. Front short, strongly deflexed, ending in a rounded knob, deeply channelled above—the channel interrupted just in front of the eyes by three small rounded tubercles on either side. Antero-lateral margins with a rounded eminence crowned by a tubercle, on the hepatic region, followed by a sharp projecting rim formed by nine closely approximated compressed lobes granulated on their outer borders, the ninth longer than the rest, and with an accessory tooth on its posterior border; postero-lateral angle armed with a prominent blunt spine with three or four short, blunt branches; posterior border with two compressed triangular teeth, of which the outer is much the larger, near the postero-lateral angle, and two tubercles on either side above the insertion of the abdomen. Arm with seven or eight irregular compressed triangular teeth on its posterior, and three on its anterior border, four prominent tubercles situated in a longitudinal row on its upper surface; wrist with a few depressed tubercles; hand with numerous, mostly granulated tubercles, irregularly scattered on the upper surface, forming several irregular rows on the posterior (external) surface, a row of seven or eight on the anterior (internal) border and another of about half a dozen on the lower border; fingers stout, minutely granulated, movable fingers with a crest of laciniated teeth above. Ambulatory limbs compressed, carinated, an irregular number of teeth on the carinæ; terminal joint very long and slender.

Port Denison; Port Molle, fourteen fathoms (W. A. H., H.M.S. "*Alert*").

Genus CRYPTOPODIA, Milne-Edwards.

Carapace transversely triangular, with the lateral margins greatly produced and concealing the ambulatory legs, the posterior margin also prolonged backwards. Front very prominent. No ridges on the pterygostomian regions. [*M.*]

58. Cryptopodia fornicata. A.M.

Cancer fornicatus, Fabr., Ent. Syst., t. ii., p. 453; Herbst, pl. 13, figs. 79–80.

Œthra fornicata, Lamk., Hist. des An. s. vert., t. vi., p. 265; Desmarest, Consid. p. 110.

Cryptopodia fornicata, Milne-Edwards, Hist. Nat. Crust., t. i., p. 362; Adams and White, Zool. of H.M.S. "Samarang," Crustacea, p. 32, pl. vi., fig. 4; Haswell, *l. c.*, p. 454.

Carapace smooth above, denticulated on the borders; rostrum entire, as long as broad; anterior legs about once and a half as long as the carapace, their third joint much dilated posteriorly, and armed with spines on the anterior border; hands armed above with a strong row of spines. Legs of the four last pairs ornamented above and below with a denticulated crest extending nearly the whole length of their third joint.

Brook Island; Cape Grenville; Port Denison. Found also in the Indian Ocean, the coast of China, etc.

59. Cryptopodia spatulifrons. A.M.

Cryptopodia spatulifrons, Miers, Ann. and Mag. Nat. Hist. (5), iv., 19, p. 26, pl. v., fig. 10 (1879); Haswell, l. c., p. 454.

Carapace transversely triangulate, with the postero-lateral angles truncated, everywhere punctate and granulated, the granulations being largest and most conspicuous on the elevated cardiac and branchial regions and on the postero-lateral and posterior expansions of the carapace. The branchial and cardiac regions are much elevated; there is a strongly marked depression in the centre of the carapace; and the surface of the carapace behind the antero-lateral margins and the posterior margin are concave; the antero-lateral margins are denticulated and the postero-lateral and posterior margins crenulated. The rostrum is prominent, not deflexed, smooth and of a semi-elliptical shape, sub-acute at the extremity and with a series of sub-marginal

punctures. The anterior legs are very robust; surface smooth but coarsely punctured; the anterior and posterior margins of the arm are produced into dentated crests, the posterior expansion being greatly dilated towards the distal extremity; the oblique crest on the anterior surface of the hand is armed with six prominent triangular teeth, the posterior margin being three-dentated; the under surrace of the anterior legs is coarsely punctulated and granulated. The ambulatory legs are smooth, longitudinally carinated on the upper and under surface. [*M.*]

Shark's Bay, W. Australia; Port Jackson (very rare).

Sub-Family Eumedoninæ.

Carapace usually rhomboidal or sub-pentagonal, with a spine at the juuction of the antero-lateral and postero-lateral margins. Rostrum usually bifid or emarginate. Depressions separating the regions of the carapace obscure or non-existent. Anterior legs of moderate length, not trigonous.

Genus ZEBRIDA, White.

Carapace flat and smooth above. Spines of rostrum and lateral spines of carapace large, laminate. Basal antennal joint large and filling the orbital hiatus. Ambulatory legs with all the joints greatly dilated and compressed, spinous.

60. Zebrida longispina.

Zebrida longispina, Haswell, *l. c.*, p. 454, pl. xxvii., fig. 3.

Distinguished from *Z. Adamsii*, White, by having all the spines longer and more acute.

Darnley Island, Torres Straits (Macleay Museum).

Genus GONATONOTUS, Adams and White.

Carapace uneven above. Rostrum broad, lamellate, rounded, and very slightly emarginate or entire at its distal extremity. Anterior legs of moderate size. Ambulatory legs slender, not dilated and compressed.

61. Gonatonotus pentagonus. A.M.

Gonatonotus pentagonus, Adams and White, Zool. of the "Samarang," Crust., p. 33, pl. vi., fig. 7; Haswell, l. c., p. 455.

Carapace above closely verrucose, the warts depressed; a rather strong ridge across the back, extending from one lateral angle to the other, with two tubercles in the middle; the front grooved down the middle; the centre of the back with two longitudinal impressions; terminal joint of abdomen, in the female, verrucose.

Port Denison (Mr. Alex. Morton). Found also on the coast of Borneo.

62. **Gonatonotus crassimanus.** A.M.

Gonatonotus crassimanus, Haswell, l. c., p. 455, pl. xxvi., fig. 4.

Carapace and limbs covered with miliary granulations. Rostrum deeply cleft anteriorly, the cornua straight—the cleft continued on the dorsal surface of the carapace into a mesial groove which reaches nearly half-way towards the posterior border. Branchio-cardiac groove very deep. Anterior limbs once and a half as long as the carapace, second and third joints each with a small compressed tooth on its anterior margin; fourth joint armed with a prominent slightly curved tooth; hand with two strong blunt teeth above, fingers stout, acuminate, armed with a few triangular teeth. Posterior limbs carinate above, the carina on the third joint with two inconspicuous tubercles, and ending distally in a tooth-like process. Length five and a half lines; breadth four and a half.

Port Jackson (rare).

Genus HARROVIA, Adams and White.

Carapace slightly tuberculate, lateral spine small. Front broad, truncated, and divided by three fissures into four lobes, of which the median are truncated and the lateral acute. Anterior legs elongated; ambulatory legs slender.

63. **Harrovia tuberculata.**

Harrovia tuberculata, Haswell, l. c., p. 455, pl. xxvii., fig. 1.

Dorsal surface of carapace with eight tubercles crowned with bundles of hairs, four of them on the gastric region in pairs, the anterior pair situated far apart, the posterior close together; two close together in the same transverse line on the anterior part of the cardiac region; one on each branchial region. Antero-lateral

margins with two teeth, situated close together, the anterior low, triangular, blunt, the posterior, occupying the laterial angle, more prominent, triangular, acute. Supra-orbital tooth pointed, projecting slightly beyond the front. Ambulatory limbs compressed; meropodites of the second, third and fourth pairs with a tooth at the distal end of the upper border; upper border of the merus-joint of first pair with two small tubercles towards the middle above, that of the second and third pairs each with a single tubercle in the same situation. Abdomen (of male) with lateral fringes of hairs. In other points resembling *Harrovia albo-lineata*.

Darnley Island, Torres Straits (Macleay Museum).

Sub-Tribe CYCLOMETOPA.

Carapace usually transverse, wide in front, regularly arcuate anteriorly (sometimes quadrate or sub-orbicular), never acuminate or rostrate. Efferent channel, branchiæ, male genital appendages and external maxillipedes as in the *Oxyrhyncha*. Epistome short, transverse. Internal antennæ usually transversely plicate.

Family I. CANCRIDÆ.

Carapace usually transverse, often convex with the antero-lateral margins arcuate. The teeth of the margins often obtuse or obscure. Margin of the efferent channel to the branchiæ not defined by a longitudinal ridge on either side of the palate. Ambulatory legs all gressorial, with styliform tarsi. [*M.*]

Sub-Family Xanthinæ.

Internal antennæ more or less transverse. External antennæ firmly fixed at their base, the flagellum not excluded from the orbit. Inter-orbital region broad. Digits acuminate or spoon-excavate.

Genus CARPILIUS, Leach.

Carapace smooth, convex, without trace of divisional lines. Antero-lateral border longer than the postero-lateral, without a prominent margin. Front very often distinctly 4-lobed. Orbits without an external hiatus. Basal joint of the antennæ long and prolonged into the internal canthus of the orbit. Ambulatory legs smooth, cylindrical, not crested. Abdomen of male composed of six segments. [*D.*]

64. **Carpilius convexus.**

Cancer convexus, Forskäl, Descript. Anim., p. 88.

Carpilius convexus, Rüppell, Crust. de l'Egypte, pl. 3, fig. 2; Milne-Edwards, Hist. Nat. Crust., t. i., p. 382, pl. xvi., figs. 9 et 10; De Haan, Faun. Japon. Crust., p. 17; Dana, U.S. Explor. Exped., Crust., t. i., p. 159, pl. vii., fig. 5; A. M.-Edw., Nouv. Arch. du Mus., t. i., p, 215.

Front rather broad and formed of four lobes, of which the two lateral are almost straight, and the two median nearly coalescent and little prominent. Carapace very convex; hepatic region and anterior portion of the gastric region punctate. Colour yellowish, irregularly spotted with red.

Widely distributed in the Pacific and Indian Oceans and Red Sea.

Genus ATERGATIS, De Haan.

Carapace broad, convex, regions usually indistinct. Front lamellar, not prominent, straight or slightly sinuous. Antero-lateral border longer than the postero-lateral, usually entire, prominent, and sharp. Orbits without an external hiatus. Basal joint of the antennæ joined to the front only by its internal angle. Ambulatory legs compressed, surmounted by an acute crest.

65. **Atergatis floridus.** A.M.

Cancer floridus, Rumph., D'Amboinische Rariteitenkammer, p. 16, pl. viii., fig. 5; Linnæus, Syst. Nat., xii. ed., p. 1041.

Cancer ocyroë, Herbst, Krabben u. Krebse, pl. liv., fig. 2; M.-Edw., Hist. Nat. Crust., t. i., p. 375.

Atergatis floridus, De Haan, Fauna Japon., Crust., p. 46; Dana, U.S. Explor. Exped., Crust., t. i., p. 159, pl. vii., fig. 4; A. M.-Edw., Nouv. Arch. du Mus., t. i., p. 243; Miers, Ann. and Mag. Nat. Hist., 1880, p. 7.

Carapace dilated, broad, with regions pretty distinctly indicated. Surface slightly embossed, very finely punctate. Antero-lateral borders lamellar, sharp, terminating behind in a small rounded tooth and presenting one or two minute fissures. External orbital angle distinct from the antero-lateral border. Front much inclined downwards, broad, prominent in the middle, and

scarcely sinuous. Anterior legs with the hand very slightly rugose externally, strongly carinated above. Fingers large, excavated. Penultimate joint of the ambulatory legs without prominent crest on its lower border.

Port Denison, etc.; common on coral reefs. A widely distributed tropical species.

66. Atergatis roseus.

Carpilius roseus, Rüppell.

Cancer roseus, Milne-Edwards, Hist. Nat. Crust., t. i., p. 374.

Atergatis roseus, De Haan, Fauna Japonica, Crust., p. 17; Heller, Synops. der Crust. des Rothen Meeres, p. 3; A. Milne-Edwards, Nouv. Arch. du Mus., t. i., p. 239.

Carapace strongly convex, without indication of regions. Surface covered with small depressions, more close-set and deeper on the antero-lateral than on the posterior portions. Branchio-cardiac grooves strongly marked. Antero-lateral borders entire and without tubercle or crest at their posterior extremity. Front deflexed, its middle lobes scarcely separated and very broad; the lateral lobes, which form the external orbital angles, very small and much less conspicuous. Hands rugose above and externally. Crests of the ambulatory legs very stong, unequal, and acute. Colour reddish, with the fingers black. [*A. M.-Edw.*]

Darnley Island, Torres Straits (Macleay Museum).

67. Atergatis latissimus.

Zozymus latissimus, M.-Edw., Hist. Nat. Crust., i., p. 384.

Atergatis latissimus, A. M.-Edw., Nouv. Arch. du Mus., t. i., p. 237, pl. xiv., fig. 1.

Atergatis sinuatifrons, Adams and White, Zool. of H.M.S. "Samarang," Crust., p. 38.

Carapace ovoid, extremely broad, rather convex; antero-lateral border very long, margined with a lamelliform entire crest which does not end in a tubercle, but curves back sharply on the branchial region. Median lobes of the front curved and little prominent; anterior legs strong; fingers without crests or canaliculi on the external surface, an elevated crest on both the upper and lower borders of the ambulatory legs. [*M.-E.*]

Milne-Edwards gives the locality of this species as New Holland. It has since been found at Mauritius and in "Oceania;" it is only a doubtful Australian species.

Genus Lophactæa, A. Edwards.

Carapace strongly convex both transversely and antero-posteriorly. Antero-lateral borders long, forming a regular curve of large radius with the front; with a fine sharp border divided by narrow incisions into lobes. Regions well-defined, divided into lobes by smooth fissures. Front lamellar, straight or slightly sinuous. Antennary region and external maxillipedes as in *Atergatis*. Chelipedes sub-equal, sometimes surmounted by a crest, sometimes rounded above. Ambulatory legs short, compressed laterally, crested above. Abdomen of the male with five segments.

68. Lophactæa granulosa.

Xantho granulosus, Rüppell.

Ægle granulosus, De Haan, Faun. Japon., p. 17.

Cancer limbatus, Milne-Edwards, Hist. Nat. Crust., t. i., p. 377, pl. xvi., fig. 14.

Atergatis limbatus, Dana, op. cit., t. i., p. 157; Heller, Synops. der Crust. des Rothen Meeres, p. 4.

Lophactæa granulosa, A. M.-Edw., Nouv. Arch. du Mus., t. i., p. 247.

Carapace broad; surface closely covered with coarse rounded and prominent tubercles, which become obsolete on the posterior portion of the carapace. Front straight and interrupted in the middle line by a linear fissure. Antero-lateral borders longer than the postero-lateral borders, thin, lamellar, smooth, and divided by three linear fissures into four lobes of which the last is the smallest. Chelipedes sub-equal; hand rounded and granular above, not crested.

Cape Grenville (Macleay Museum). Found previously in the Red Sea and on the coast of Zanzibar.

Genus Actæa, De Haan.

Carapace broad, convex, especially in the antero-posterior direction; slightly convex behind. Regions strongly marked

and nearly always sub-divided into lobes or lobules, which are generally covered with granulations. Front formed of two rounded lobes separated by a narrow fissure. Basal joint of the antennæ short and broad, joined to the internal supra-orbital angle; flagellum lodged in the internal orbital hiatus. Orbit with two fissures above and usually one below. Antero-lateral borders thick, divided into inconspicuous lobes or teeth. Postero-lateral borders short, and nearly always concave. Ambulatory legs broad, laterally compressed.

69. **Actæa tomentosa.** A.M.

Zozymus tomentosus, Milne-Edw., Hist. Nat. Crust., t. i., p. 385; Atlas du Règne Anim. de Cuvier, Crust., pl. xi., bis, fig. 2.

Actæodes tomentosus, Dana, U.S. Explor. Exped., Crust., i., p. 197.

Actæa tomentosa, A. M.-Edw., Nouv. Arch. du Mus., t. i., p. 262.

Carapace ovoid, very broad, lobulated in front as well as behind, the lobules covered with regular granules and separated by deep sulci. Surface completely covered with a very short close down which does not conceal the granulations. Antero-lateral borders granular, and divided into four inconspicuous lobes, by four fissures which are prolonged on the pterygostomial regions in the form of grooves. Postero-lateral borders very short and concave. Front deflexed, little prominent, deeply incised mesially, sinuous laterally. Anterior legs covered with a thick down which hides large pointed granules; fingers villous, granular, white at the tips, and deeply excavated. [*M.-E.*]

Port Denison, etc., common on coral reefs. Widely distributed throughout the Oriental Region.

70. **Actæa granulata.** A.M.

Cancer granulatus Aud., Explication des Planches de l'Egypte, Crust., pl. vi., fig. 2; De Haan, Faun. Japon. Crust., p. 47.

Cancer Savignyi, M.-Ed., Hist. Nat. Crust., t. i., p. 378.

Actæa pura, Stimpson, Proc. Acad. Nat- Sci., Philad., 1857, sp. 60.

Actæa granulata, A. M.-Edw., Nouv. Arch. du Mus., t. i., p. 275.

Carapace glabrous, narrow, very convex, lobulated in front only; lobules not very prominent and separated by broad sulci. Surface of the carapace and of the limbs completely covered with close-set tubercles, each in turn covered with minute granular points. Antero-lateral borders very convex, obscurely divided into four lobes. Postero-lateral borders very concave.

Port Denison; Port Stephens; Port Jackson. A widely distributed species.

71. **Actæa calculosa.** A.M.

Cancer calculosus, M.-Edw., Hist. Nat. Crust., t. i., p. 378.

Actæa calculosa, A. M.-Edw., Nouv. Arch. du Mus., t. i., p. 276, pl. xviii., fig 3.

Carapace glabrous, moderately broad, slightly dilated in front, flat behind, lobulated only in front; lobules not very prominent. Surface covered with large depressed granules becoming obsolete behind. Antero-lateral borders imperfectly divided into four rounded lobes. Postero-lateral borders straight. Front prominent, and excavated in the middle. Anterior legs short, sub-equal, rounded above and covered, as well as the wrist with large tubercles. Fingers granular only at the base, short, black with white tips. Ambulatory legs short, strong, and compressed; third joint with the upper border acute and slightly denticulated. Fourth and fifth joints tubercular. [*A. Milne-Edwards.*]

Specimens from Port Denison in the Australian Museum are distinguished from those described and figured by Milne-Edwards, by having the upper borders of the third joint of the ambulatory limbs much more strongly dentate, especially towards the distal extremity, and by having the granules on the succeeding joints produced and acute. The granules are surrounded each by radiating punctations. This species is very closely allied to *A. granulata.*

72. **Actæa affinis.**

Actæodes affinis, Dana, U.S. Explor. Exped., Crust., i., p. 197, pl. xi., fig. 3; A. M.-Edw., Nouv. Arch. du Mus., t. i., p. 263.

Like the *tomentosus* in areolets, but the cardiac areolet nearly bisected; carapace a little narrower, more minutely granulous, sparingly tomentose. Antero-lateral margin 4-dentate. Finger

of hand spinulous, spinules larger and fewer than in the *tomentosus*. Outer maxillipedes naked, smooth. Abdomen sparsely pubescent. [*Dana.*]

Port Jackson.

The specimens which I refer to this species agree with Dana's description in all points, save that the mobile finger has only a few tubercles at its base and no spinules. The shape of the cardiac areolet is a little different from the figure, being more deeply divided in the centre.

73. Actæa Peronii. **A.M.**

Xantho Peronii, Milne-Edwards, Hist. Nat. Crust., i., p. 392.

Xantho spinosus, Hess, Archiv für Naturg., xxxi., p. 132, pl. vi., fig. 3.

Carapace slightly convex, covered on the anterior portion with small flattened tubercles, wrinkled behind. The separate regions well defined, The antero-lateral border divided into four large quadrangular lobes. Front deflexed, prominent, almost bilobed, rounded. Legs depressed, thin, the penultimate and ante-penultimate pairs with long spines on the upper border, the dactyli very acute and hardly curved. Arm short. Carpus and hand with very large tubercles on the surface. Hand as long as broad. Fingers provided with a longitudinal furrow on the upper surface. Colour bright red; hand, and part of the carpus, white; fingers brown. [*Hess.*]

Port Jackson; Port Stephens.

This species, not uncommon in Port Jackson, seems to be the *Xantho Peronii* of Milne-Edwards.

Genus Liomera, Dana.

Carapace very broad; regions indicated by shallow grooves; antero-lateral borders thick. Orbits small and deep. Basal joint of the external antennæ only joining the process from the front by its internal angle. Third joint of the external maxillipedes sub-rectangular, the inner border longer than the outer. Fingers usually spoon-excavate; hand not cristate. Ambulatory legs rounded above. [*A.M.-E.*]

74. Liomera maculata.

Liomera maculata, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Carapace very wide, convex, smooth and shining, punctate close to the anterior border, the regions but faintly indicated. Front rather deeply incised, the lobes rounded. Antero-lateral margins with three obscure lobes, the last marked off behind by a short groove, and separated from the second by a longer and deeper groove. Internal angle of lower orbital border tooth-like. Hand with a few longitudinal rows of minute punctations on its outer surface; fingers pointed. Ambulatory legs smooth and shining, the upper and lower borders of the terminal joint tomentose. Carapace and legs light cream colour, the former ornamented with numerous round red spots, and with three large more diffuse blotches on the anterior portion; fingers light brown, except at the base, which partakes of the general ground-colour; ambulatory legs each marked with two transverse bands of red.

Endeavour River (Macleay Museum.)

Genus EUXANTHUS, Dana.

Carapace broad, usually strongly convex and much embossed. Antero-lateral borders divided into several inconspicuous lobes, and prolonged in front so as to terminate at the anterior part of the buccal orifice. Postero-lateral borders strongly concave. Front prominent. Basal joint of the external antennæ very long and prolonged as in *Etisus* into the internal orbital hiatus; the flagellum inserted in the orbit. Endostome smooth. Third joint of the external maxillipedes broader internally than externally; the fourth joint inserted at its antero-internal angle. Chelipedes covered with rounded bosses. Ambulatory legs short and compressed. Abdomen of the male composed of five joints. [*A. M.-Edw.*]

75. Euxanthus Huonii.

Euxanthus Huonii, Lucas, Voy. au Pôle Sud, Crustacés, p. 16, pl. iv., fig. 1; A. M.-Edw., Nouv. Arch. du Mus., i., p. 290, pl. xv., fig. 1.

Carapace very convex and covered with rugose bosses. Front prominent and formed of two conspicuous lamelliform lobes. A

small tubercle at the external orbital angle. Antero-lateral borders very long, regularly curved, divided into six teeth which are prominent, rounded, and connected together by a finely granular line; the first smaller than the rest and placed close to the second, the rest sub-equal and regularly disposed. Posterior borders concave and finely granulated. Chelipedes sub-equal, small; hands rugose, with a few large rounded tubercles above, and longitudinal rows of granules externally; fingers granular, black, the black colour extending on to the hand; carpus embossed and granular; merus granular on its upper border. Ambulatory legs tuberculated and granular. [*A. M.-Edw.*]

Cape Grenville (Macleay Museum).

76. Euxanthus maculatus.

Euxanthus maculatus, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Surface strongly embossed, the bosses prominent, rugose or punctate. Front deflexed, bilobed. Supra-ciliary border very thick. Anterior half of antero-lateral border entire, posterior half with three indistinct teeth. Chelipedes very rugose externally, hand with longitudinal rows of pits on its outer surface. Ambulatory legs granular. Colour light red with darker blotches.

Darnley Island, Torres Straits (Macleay Museum).

77. Euxanthus mammillatus.

Cancer mammillatus, M.-Edw., Hist. Nat. Crust., i., p. 376.

Melissa mammillata, Strahl, Archiv für Natur., 1861, p. 103.

Euxanthus mammillatus, A. M.-Edw., Nouv. Arch. du Mus., t. i., p. 292, pl. xv., figs. 2, 2 a, 2 b.

Carapace broad, dilated, covered with smooth and prominent elevations. Front prominent, Antero-lateral borders long and arched, divided into irregular lobes, which can be set down as six in number; the three first are rather formed by undulations of the border; the fourth is dentiform and prominent, the fifth is not prominent and often appears as two lobes; the sixth is dentiform and conspicuous. Postero-lateral borders concave.

Genus XANTHODES, Dana.

Form of carapace approaching that of *Pilumnus* and *Eriphia*, not much deflexed in front, depressed, not dilated at the sides; antero-lateral border longer than the postero-lateral; posterior region of the carapace flat. Orbits not interrupted by an external. hiatus. Basal joint of the external antennæ short, reaching the front only through the intermediation of a frontal process. Abdomen of the male five-jointed.

78. Xanthodes notatus. A.M.

Xanthodes notatus, Dana, U. S. Explor. Exped., Crust., i., p. 178, pl. viii., fig. 12.

Carapace anteriorly neat areolate, the areolets flat with abrupt sulci between, and surface nearly smooth or very minutely erose; front nearly straight, emarginate, antero-lateral margin 5-toothed; first tooth nearly obsolete, second and third tuberculiform, fourth and fifth acute spiniform. Anterior feet quite unequal, larger hand and carpus small tuberculate, hand smooth above, shining, smaller hand and carpus densely armed with spines. Eight posterior legs hirsute, third joint above denticulate. [*D.*]

Port Jackson. (?) Found also at the Society and Sandwich Islands.

The specimen which I refer to this species has the spines of the smaller hand shorter than in Dana's figure, and the upper surface of the larger wrist and hand with much fewer tubercles. The fingers of both hands are blackish brown the dark colour not extending on the palm.

79. Xanthodes atromanus. Plate i., fig. 1. A.M.

Xanthodes atromanus, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Allied to the preceding; distinguished from it mainly by having a prominent triangular tooth at the inner angle of the lower orbital border; the hands not very unequal, the wrist of both slightly tuberculate externally, and with two pointed tubercles internally; the hands with a deep longitudinal groove on the outer surface near the upper border, the larger hand with two and the smaller with three longitudinal rows of tubercles below

this; the fingers black—the black extending backwards for some distance on the palm. Length 7/16ths inch; breadth 11/16ths.

The locality of the two preceding species is doubtful.

X. atromanus is distinguished from *X. pachydactylus*, A. Milne-Edwards, by the presence of the rows of tubercles on the outer surface of the hands and other points.

80. **Xanthodes scaber.** A.M.

Cancer scaber, Fabr., Suppl., p. 336.

Xantho scaber, M.-Edw., Hist. Nat. Crust., t. i., p. 390.

Carapace very granular everywhere and strongly embossed in front, but without conspicuous prominences or sulci on the cardiac region and the corresponding portion of the branchial regions. Antero-lateral borders strongly curved, and divided into four indistinct lobes. Pterygostomial regions granular and marked with small grooves contiuuous with the notches between the lobes of the antero-lateral margins. Postero-lateral borders straight. Hands broader than in *X. setiger;* fingers without distinct canaliculi. [*M.-Edw.*]

This species is nearly allied to *X. Lamarckii*, but the antero-lateral lobes are very indistinct, and the outer surface of the hand is not grooved.

Holborn Island, near Port Denison, collected by Mr. Alex. Morton; Low Island (Macleay Museum).

Genus CYCLOXANTHUS, A. Milne-Edwards.

Allied to *Xantho*, but with the front extremely prominent, the antero-lateral borders long and strongly curved behind; the third joint of the external maxillipedes sub-quadrilateral; the abdomen of the male consists of five moveable joints.

81. **Cycloxanthus punctatus.**

Cycloxanthus punctatus, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Carapace with the regions well defined, ornamented with scattered punctations; front very prominent, entire, deflexed;

antero-lateral borders forming a re-entering angle with the front, strongly arched, with four faintly-marked lobes. Chelipedes closely pitted externally, so as to appear reticulated. Ambulatory legs compressed, ornamented with scattered punctations; terminal joint with four longitudinal ribs or carinæ.

Parramatta River (Macleay Museum).

Genus Panopœus, Edw.

Antero-lateral borders thin, toothed, generally shorter than the postero-lateral. Orbit with an external hiatus. [*D.*]

82. **Panopœus acutidens.** Plate i., fig 2. A.M.

Panopœus acutidens, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Carapace moderately convex, with a series of granules and granular hairy tubercles in front and at the sides; a long curved granular hairy ridge extending inwards and slightly forwards from near the base of the fourth lateral tooth; smooth behind and in the centre. Front four-lobed, the median lobes broad, rounded, separated by a rounded excavation; lateral lobes narrower and rather more prominent. Orbital margin granular external hiatus wide. Antero-lateral margin with five wide, compressed teeth, the first low and rounded, the second larger but truncate, the third a little longer than the second and sub-acute, the fourth and fifth sub-conical, acute. Anterior legs unequal; the right larger than the left, its wrist with two conical spines on its inner border, hand dilated, with two or three small tubercles on its inner surface, hand and wrist ornamented with small granules mostly disposed in transverse rows and beset with short bristles; fingers stout with rounded teeth, hooked at the tips; left with the hand narrower than the right, the fingers very long and slender, hooked at the tips and armed with triangular acute teeth. Abdomen of female bordered with a close fringe of long hairs. Length of carapace 1 and 1/16ths inch; breadth 1¼ inch.

Port Darwin.

A near ally of *Panopœus dentatus*, Adams and White, but distinguished by the form of the antero-lateral teeth, etc.

Genus PSEUDOCARCINUS, Milne-Edwards.

Carapace slightly convex and a little embossed near the front. Front nearly horizontal. Antero-lateral borders moderately curved and armed with more or less prominent teeth; postero-lateral borders straight, convergent. Basal joint of the external antennæ very small, second joint scarcely reaching the front, third joint occupying, but not filling, the orbital hiatus. Palate not canaliculated. Chelipedes very large.

83. Pseudocarcinus gigas.

Cancer gigas, Lam., Hist. des Ani. Sans Vert., t. v., p. 272.

Pseudocarcinus gigas, Milne-Edwards, Hist. Nat. Crust., i., p. 409.

Carapace slightly convex and swollen on the sides; front armed with four thick pointed teeth, near the base of which on the gastric region is an equal number of rounded tubercles. Antero-lateral borders obscurely divided into four lobes, each armed with two or three spiniform teeth. Orbits divided by four fissures. Anterior legs very thick, posterior border of the arm spinose; carpus armed internally with two teeth. Ambulatory legs rounded, armed with spines on the upper border of the third joint. [*M.-Edw.*]

Bass' Straits; Port Philip.

This species is one of the giants of the class, the carapace being sometimes two feet in breadth.

Genus MEDÆUS, Dana.

Carapace narrow, scarcely transverse, naked; front rather short. Orbits with two teeth below and one externally. Antero-lateral margin produced under the orbit. Anterior legs thick.

84. Medæus nodosus. A.M.

Medæus nodosus, A. M.-Edw., Nouv. Arch. du Mus., t. ix., p. 212, pl. viii., fig. 2.

Carapace strongly lobulated, the lobules granular. Front slightly emarginate in the middle, straight and prominent. Antero-lateral borders divided into four rounded and granular teeth, of which the two posterior are the strongest. Anterior

legs covered with granular nodosities disposed in regular series. Ambulatory legs slender and without spines above.

Holborn Island, near Port Denison, on coral reef. Originally found in New Caledonia.

There are some differences between the specimen from Port Denison and the New Caledonian species described by Milne-Edwards; thus the front is more concave in the centre, and the anterior margin of the buccal cavity is without the strong beading shewn in Milne-Edwards' figure; but the correspondence in all other points is too close to permit of their being regarded as distinct species.

Genus MENIPPE, De Haan.

Antero-lateral margin shorter than the postero-lateral. Basal joint of the external antennæ short, neither reaching the front nor a process of the front. Abdomen of the male seven-jointed.

85. Minippe Legouilloui.

Minippe Legouilloui, A. M.-Edw., An. Soc. Ent. France, vii., p. 274 (1867); Miers, Ann. and Mag. Nat. Hist., 1880, p. 9.

Swan River (Brit. Museum).

I have not seen the description of this species.

Sub-Family Chlorodinæ.

Internal antennæ transverse. External antennæ firmly fixed at the base, the flagellum rarely excluded from the orbit. Inter-orbital region rather broad. Fingers spoon-excavate. [*D.*]

Genus ETISUS, Leach.

Internal orbital hiatus occupied by a process of the base of the antennæ, excluding the flagellum from the orbital cavity. Front broad, lamellar; antero-lateral borders strongly toothed. [*D.*]

86. Etisus dentatus.

Cancer dentatus, Herbst, Krabben und Krebse, i., p. 186, pl. xi., fig. 66 (1790).

Etisus dentatus, M.-Edw., Hist. Nat. Crust., i., p. 411 (1834).

Carapace convex, the regions distinct. Front prominent and formed of two large flattened and truncated lobes, external to which is a large rounded tubercle which occupies the internal orbital angle. Orbits armed with four teeth, one above, one at the external angle, and two below. Antero-lateral borders pretty strongly curved, reaching the plane of the cardiac region, and obscurely divided into four lobes, each ornamented with a strong rounded tooth, recurved forwards; the two middle lobes present in addition two or three smaller teeth, so that the total number is at least eight on each side. Ambulatory legs armed with spines above.

Torres Straits (Brit. Museum). A widely distributed species.

87. Etisus lævimanus. **A.M**

Etisus lævimanus, Randall, Journ. Acad. Nat. Sci. Philad., viii., p. 115; Dana, U.S. Explor. Exped., Crust., i., p. 185, pl. x., fig. 1.

Carapace broad, distinctly but lightly areolate, front between the outer antennæ nearly straight, thin, not deflexed; antero-lateral margin with five broad teeth, teeth not very prominent, the second very obtuse. Anterior feet stout, hand on upper and outer sides smooth; following pairs of feet compreseed, fourth, fifth, and sixth joints spinuloso-granulate above.

Holborn Island, near Port Denison, on coral reef. Found also in Fiji, the Sandwich Islands, etc.

Genus Chlorodopsis, A. M.-Edw.

Carapace not very broad, depressed, regions well marked in front, antero-lateral borders shorter than the postero-lateral, or equal to them, and armed with spines; flagellum of the antennæ inserted under the front, and excluded from the orbit by a prolongation of the basilar joint, which fills the hiatus. Anterior border of the third joint of the external maxillipedes excavated; legs spinulous; fingers spoon-excavate.

88. Chlorodopsis areolatus.

Chlorodius areolatus, M.-Edw., Hist. Nat. Crust., i., p. 400.

? Etisodes cœlatus, Dana, U.S. Explor. Exped., Crust., i., p. 188, pl. ix., fig. 4.

Chlorodopsis areolatus, A. M.-Edw., Nouv. Arch. du Mus., ix., p. 231, pl. viii., fig. 8.

Carapace strongly embossed; front broad and divided into four very distinct lobes. Antero-lateral borders short, nearly straight, and divided into four triangular teeth. Anterior legs granular; following pairs, as well as the inferior surface of the body, nearly smooth.

Port Jackson, and other points on eastern coast.

89. Chlorodopsis melanochirus. A.M.

Chlorodopsis melanochirus, A. M.-Edw., Nouv., Arch. du Mus., t. ix., p. 228, pl. viii., fig. 5.

Carapace broad, convex, regions distinctly indicated, their lobules separated by smooth sulci; all the prominent parts covered with granulations and stiff brown bristles, and near the borders with spiniform tubercles. Front formed of two median granular lobes separated by a smooth depression, and of two small lateral prolongations situated internal to the external antennæ. Orbits wide, their margins spinulous. Antero-lateral borders divided into four lobes, each bearing several small spines. Anterior legs unequal and robust; hand clothed above and externally with numerous pointed tubercles and stiff brown hairs. Fingers black, white at the tips, the black extending on the hand laterally and below to near the articulation of the wrist. [*A. M.-E.*]

Holborn Island, near Port Denison, on coral reefs; also Darnley Island, Port Molle, etc. Found originally in New Caledonia.

Genus Etisodes, Dana.

Nearly allied to *Etisus*, but with the carapace narrower and more lobulated, and the front more deeply incised.

90. Etisodes anaglyptus.

Etisus anaglyptus, M.-Edw., Hist. Nat. Crust., i., p. 411.

Carapace scarcely convex, and not so much as once and a half as broad as long; front and orbits nearly as in *Etisus dentatus*. Antero-lateral borders little curved, nearly of the same length as the postero-lateral, and armed with four large triangular and

prominent teeth (not including the external orbital angle). Antennæ as in *E. dentatus*. Anterior legs strong and ornamented with tubercles, those of the four last pairs as in *E. dentatus*, only ornamented in addition with long hairs. Length about an inch and a half. [*M.-E.*]

Australasia (Paris Museum).

91. Etisodes frontalis. **A.M.**

Etisodes frontalis, Dana, U.S. Explor. Exped., Crust., i., p. 187, pl. ix., fig. 3.

Carapace anteriorly areolate, posteriorly plane, areolets nearly flat; front much produced, horizontal; antero-lateral margin 5-toothed, teeth sub-triangular, posterior tooth much smaller than preceding. Anterior feet unarmed, hand not smooth above, mobile finger somewhat tricarinate above; carpus granulous, and having a prominence adjoining the articulation with the hand. Eight posterior feet somewhat pubescent, third joint unarmed. [*D.*]

Holborn Island, near Port Denison, on coral reef. Found also in the Sooloo Sea.

Genus CARPILODES, Dana.

Carapace broad, naked, convex behind. Antero-lateral margins thickly rounded. Internal orbital hiatus occupied by the base of the antennæ; flagellum not excluded from the orbit. Eight posterior feet sub-cylindrical, naked. [*D.*]

92. Carpilodes tristis. **A.M.**

Carpilodes tristis, Dana, U.S. Explor. Exped., Crust., i., p. 193, pl. ix., fig. 7.

Carapace broad sub-rhombic, smooth, not shining, somewhat areolate anteriorly; front short, almost straight, very slightly emarginate, antero-lateral margin four-lobed, lobes rounded; postero-lateral side straight, convex. Anterior feet equal, short and small, naked and unarmed, smooth. Posterior feet hardly at all compressed, naked. [*D.*]

Holborn Island, near Port Denison; Molle Island, Port Molle, on coral reef (W. A. H.); Darnley Island, Torres Straits.

93. Carpilodes vaillantianus?

Carpilodes vaillantianus, A. Milne-Edwards, Nouv. Arch. du Mus., tom. i., p. 231, pl. xi., fig. 3.

Carapace very broad, convex antero-posteriorly, embossed in front. Surface granular on the antero-lateral portions, smooth behind. Protogastric lobes divided by a longitudinal groove, which is not prolonged backwards as far as the gastric grooves; mesogastric grooves strongly marked in front but becoming less distinct behind; branchio-hepatic groove not prolonged as far as the gastric region; cardiac region not defined from the branchials. Front divided by a mesial fissure, sinuous laterally. Antero-lateral borders divided into four dentiform, rounded, granular lobes. Chelipedes very granular, the hand ornamented externally with rows of granules. Fourth and fifth joints of the ambulatory legs granular. [*M.-Edw.*]

Cape Grenville (Macleay Museum).

94. Carpilodes granulosus.

Carpilodes granulosus, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Carapace very broad, convex, strongly embossed anteriorly, covered with extremely minute granulations, and with a few scattered punctations, more numerous near the anterior and antero-lateral borders; inter-lobular grooves well-marked; proto-gastric lobes divided by a longitudinal groove; epi-gastric lobes prominent, distinctly marked off from the proto-gastric, meso-gastric prolonged to a point between the latter, the grooves defining it prolonged backwards to join the branchio-gastric groove; gastric region well separated from the cardiac. Front four-lobed, the outer lobes very small. Antero-lateral borders divided into four teeth. Chelipedes sub-equal, ornamented with a few scattered punctations. Carapace light brown with darker blotches; fingers of the chelipedes of a dark brown, which is prolonged a little on the inner and outer surfaces of the propodos.

Torres Straits (Macleay Museum).

Genus ZOZYMUS, Leach.

Carapace moderately broad; antero-lateral border thin; posterior portion of the carapace convex. Internal orbital

hiatus occupied by the base of the antennæ, the flagellum not excluded from the orbit. Fingers spoon-excavate. Eight posterior legs much compressed, crested or sub-crested. Similar in aspect to *Atergatis*.

95. Zozymus æneus. A.M.

Cancer æneus, Lin.

Zozymus æneus, M.-Edw., Hist. Nat. Crust., t. i., p. 385.

Carapace moderately broad, convex, very unequal, strongly embossed, and almost tubercular posteriorly; front little prominent and indistinctly divided into four lobes. Antero-lateral borders of the carapace not prolonged beyond the line of the beyond the line of the genital region, and armed with four very broad teeth, compressed and united in the form of a crest. Anterior legs tubercular externally, the following pairs grooved on their outer surface. [*M.-E.*]

A species of tolerably wide distribution in the Oriental Region. There are specimens in the Australian Museum collection from Woodlark Island, but none from Australia.

Genus LOPHOZOZYMUS, A. Milne-Edwards.

Allied to *Zozymus*, but with the carapace less convex and the fingers acute.

96. Lophozozymus octodentatus. A.M.

Xantho octodentatus, M.-Edw., Hist. Nat. Crust., i., p. 398.

Antero-lateral borders of the carapace armed with very strong teeth, separated from one another by deep fissures. Carapace slightly convex, pretty strongly embossed near the anterior border and smooth in its posterior part. Front not very prominent, divided into two lobes. Anterior legs of moderate size; carpus with two thick tubercles internally; fingers slightly grooved. Following pairs of legs very much compressed and ornamented with hairs. [*M.-E.*]

N.W. Coast (Capt. Wolcott, R.N.); Cape Grenville.

97. Lophozozymus incisus.

Xantho incisus, M.-Edw., Hist. Nat. des Crust., i., p. 397.

External surface of the hands ornamented with several horizontal rows of small tubercles; carapace very broad, little

convex, strongly embossed, and presenting on the gastric and hepatic regions several small transverse crests. Front scarcely inclined and divided into four rounded lobes, of which the two external are very small. Antero-lateral borders of the carapace divided into four teeth, of which the two first are rounded and compressed, and the two last triangular and carinated above. Anterior legs granular. Length about one inch; a few hairs on the carapace and limbs. [*M.-Edw.*]

Australasia (Paris Museum).

Genus PHYMODIUS, A. M.-Edw.

Carapace narrow, almost regularly hexagonal, strongly lobulated all over the surface. Front formed of two median rounded lobes and two lateral teeth. Antero-lateral borders thick and lobed. Basal joint of the antennæ short and broad, united to a process of the front. Fingers spoon-excavate. Ambulatory legs long, slender, and spinulous above.

98. Phymodius ungulatus. A.M.

Chlorodius ungulatus, M.-Edw., Hist. Nat. Crust., i., p. 400, pl. xvi., fig. 6-8. Dana, U.S. Explor. Exped., Crust., i., p. 204, pl. xi., fig. 8.

Chlorodius areolatus, Adams & White, Voy. of the "Samarang," Crust., p. 41, pl. xi., fig. 3.

Phymodius ungulatus, A. M.-Edw., Nouv. Arch. du Mus., t. ix., p. 218.

Carapace slightly convex and lobulated in all its extent, the lobules punctate but not granular. Antero-lateral borders thick, with five obtuse and rounded teeth, the first little conspicuous, the second and third nearly equal and prominent, the fourth smaller. Front divided into four lobules; the two median broad and rounded, the lateral smaller and narrower. Anterior feet very long; arm tubercular; fore-arm covered with coarse tubercles armed externally with an obtuse tooth. Hands strong, unequal, ornamented with tubercles; fingers black, this colour extending on the hand to the base of the fingers. Ambulatory legs long, granular, and hairy above.

Port Denison, etc. A widely distributed species, chiefly tropical.

Genus LEPTODIUS, A. M.-Edw.

Carapace more or less transverse, anteriorly areolate, posteriorly plane or imperfectly divided; lateral gastric lobes not sub-divided. Antero-lateral borders longer than the postero-lateral, toothed or lobed. Front small, truncate. Basal joint of the antennæ short and thick, in contact with a process of the front; flagellum lodged in the internal orbital hiatus. Third joint of the external maxillipedes sub-rectangular. Anterior legs unarmed. Posterior legs not spinulous.

99. **Leptodius exaratus.** A.M.

Chlorodius exaratus, M.-Edw., Hist. Nat. Crust., t. i., p. 402, and Règne Animale de Cuvier, Crust., Atlas, pl. xi., fig. 3; Dana, U.S. Explor. Exped., Crust., Vol. i., p. 207, pl. x., fig. 11; Stimpson, Prodr., etc., (Proc. Acad. Nat. Sci. Philad.) 1858, p. 31.

Xantho affinis, De Haan, Fauna Japonica, p. 48, pl. xiii., fig. 8.

Leptodius exaratus, A. M.-Edw., Nouv. Arch. du Mus., t. ix., p. 222.

Carapace very broad, depressed, slightly lobulated in front. Branchial region with three prominent lobes which follow the contour of the carapace. Antero-lateral borders with four triangular, broad and pointed teeth (not including the external orbital angle). Posterior part of the carapace depressed and completely smooth. Front truncate, narrow, formed of two lobes which are more prominent than the internal orbital angles. Anterior legs robust, fingers long and black; hand sometimes a little rugose above, completely smooth on its other aspects. Wrist with an obtuse tooth internally. Ambulatory legs smooth.

A widely distributed species.

100. **Leptodius sanguineus.**

Chlorodius sanguineus, M.-Edw., Hist. Nat. Crust., t. i., p. 402; Dana, U.S. Explor. Exped., Crust., i., p. 207, pl. xi., fig. 11.

Chlorodius Edwardsii, Heller, Synopsis der Crust. des Rothen Meeres, p. 8.

Allied to the preceding, but with the carapace in general more convex, without tubercles, and with five teeth on the antero-lateral borders, the fifth being smaller than the rest.

Perhaps only a variety of the preceding.

101. Leptodius crassimanus. **A.M.**

Xantho crassimanus, A. Milne-Edwards, Ann. de la Societé Ent. de France, t. vii. (1867), p. 267.

Leptodius crassimanus, A. M.-Edwards, Nouv. Arch. du Mus., t. ix., p. 226, pl. xi., fig. 4.

Carapace broad, moderately convex, and marked with broad and well-defined inter-regional and inter-lobular grooves. Proto-gastric lobes transversed by a longitudinal sulcus; uro-gastric lobe prolonged to a point between them; hepatic region bilobed. Portion of the carapace situated behind the lateral angles almost smooth. All the prominent portions of the carapace a little rugose. Front straight, a little deflexed, and divided into four small tuberculiform teeth, the internal orbital angle not included. Antero-lateral borders with five principal obtuse teeth, in front of which is a sixth, small, prominence. Anterior legs of the male much dilated and very robust; hand thick, a little rugose above; fingers smooth, not carinated.

Port Denison; Port Molle; Port Curtis.

102. Leptodius granulosus. **A.M.**

Leptodius granulosus, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Distinguished from *L. exaratus* mainly by having the whole carapace, with the exception of a small portion near the posterior border, ornamented with short transverse rows of granules.

Port Denison; Port Molle.

Genus Chlorodius, Leach.

Carapace nearly regularly hexagonal, flat and smooth or slightly lobulated near the antero-lateral borders. Front broad. Antero-lateral borders thick, lobed or toothed. Basal joint of the antennæ broadly joined to the front; orbital hiatus almost closed by the close approximation of the inner angles of the upper and lower orbital borders, so as to exclude the flagellum of the antennæ from the orbit. Anterior legs long and generally smooth; fingers spoon-excavate.

103. **Chlorodius niger.** A.M.

Cancer niger, Forskäl.

Chlorodius niger, Milne-Edwards, Hist. Nat. des Crust., i., p. 401; Dana, U.S. Explor. Exped., Crust., i., p. 216, pl. xii., fig. 5; A. M.-Edw., Nouv. Arch. du Mus., t. ix., p. 214.

Chlorodius hirtipes, Adams and White, Zoology of H.M.S. "Samarang," Crust., p. 40, pl. x., fig. 4.

Chlorodius cytherea, Dana, l. c., i., p. 213, pl. xii., fig. 2.

Chlorodius nebulosa, Dana, l. c., t. 1., p. 214, pl. xii., fig. 3.

Carapace nearly plane above, with a few smooth rounded lobules on the hepatic and anterior branchial regions. Antero-lateral borders with four lobes, of which the two last may be acute. Anterior legs small, arm with a minute spine on its anterior border, sometimes replaced by a few tubercles, wrist with a blunt spine. Hand and fingers smooth.

Port Jackson; Darnley Island, etc. A widely distributed species.

Family II. ERIPHIIDÆ.

Palate distinctly divided by a ridge defining the margin of the efferent canal. Carapace usually narrow, sometimes broad, antero-lateral margin rarely longer than the postero-lateral. Eyes remote.

Sub-Family Oziinæ.

Carapace more or less transverse, not dilated at the sides. Fingers acuminate. Internal antennæ transverse. Orbit with an internal hiatus occupied by the base of the antennæ. Abdomen of the male with seven articulations.

Genus Ozius, Leach.

Carapace transverse, flattened. Antero-lateral margin usually dentate and shorter than the postero-lateral. Palate with a strong ridge on either side. External antennæ with the basal joint completely reaching the front, the flagellum entering the internal orbital hiatus. Anterior legs with the fingers not spoon-excavate at the extremity; ambulatory legs of normal shape, not cristate above.

104. Ozius truncatus. A.M.

Ozius truncatus, M.-Edw., Hist. Nat. Crust., i., p. 406, pl. xvi., fig. 11; Dana, U.S. Explor. Exped., Crust., i., p. 230, pl. xiii., fig. 4; Miers, Cat. Crust., N.Z., p. 21.

Xantho deplanatus, White, Jukes' Voy. H.M.S. "Fly," p. 337.

Carapace not very wide, nearly flat above and slightly tuberculated in front. Front very wide, nearly straight, slightly sinuous, without a transverse groove in front; orbits without distinct fissures; antero-lateral margins short, divided into four or five wide obtuse lobes. Pterygostomian regions granulous; third joint of the external maxillipedes with the anterior margins notched. Basal joint of the external antennæ very oblique, flagellum rudimentary, the internal orbital hiatus very narrow. Colour brownish. Length 1⅛ in., breadth 2 in.

Port Jackson, etc. Found also in New Zealand.

105. Ozius lobatus.

Ozius lobatus, Heller, Reise der Novara, Crust., p. 21, pl. ii., fig. 4.

Carapace transverse, broad, anteriorly a little areolate, the areolets granulated, posteriorly smooth, punctate. Front of four lobes, the median pair larger than the lateral. Antero-lateral margin shorter than the postero-lateral, quadri-dentate, the two anterior teeth broad, obtuse. Anterior limbs unequal. the carpus and propodos granulated externally, naked; fingers moderate, posterior legs hirsute. [*Heller.*]

Sydney (Heller).

Probably identical with the preceding.

106. Ozius rugulosus. A.M.

Ozius rugulosus, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 23, No. 83; Heller, l. c., p. 22, pl. iii., fig. 1; A. Milne-Edwards, Nouv. Arch. du Mus., t. ix., p. 240, pl. xi., fig. 3.

Carapace convex, lobulated in front, and covered with five granulations, replaced sometimes behind by punctations. Front quadridentate. Antero-lateral borders divided into five thick and little prominent lobes, the fifth being smaller than the preceding. External orbital angle not dentiform. Anterior

legs unequal and rugose; larger hand as it were corroded externally, smaller nearly smooth. Ambulatory legs tomentose.

Port Denison, etc. Found also in the Indian Archipelago and New Caledonia.

107. Ozius guttatus. **A.M.**

Ozius guttatus, M.-Edw., Hist. Nat. Crust., t. i., p. 406; A. M.-Edw., Nouv. Arch. du Mus., t. ix., p. 239, pl. xi., fig. 1.

Carapace oval, little convex, smooth above. A transverse slightly granular line extending from the fourth lateral tooth, and directed towards the gastric region. Gastric region traversed longitudinally by two shallow grooves which limit the urogastric lobe. Antero-lateral borders divided into five dentiform lobes. which are not very prominent, the last much the smallest and sometimes absent. Front slightly bi-marginated and divided into four flattened obtuse and deflexed teeth, separated by broad clefts. Anterior legs thick and nearly smooth, Ambulatory legs tomentose towards their extremity.

Port Denison; Port Curtis.

108. Ozius sp. **A.M.**

Carapace oval, nearly smooth, slightly granular anteriorly. Front obscurely four-lobed. Antero-lateral margins almost entire, divided by three very obscure fissures. Anterior legs unequal, the larger hand smooth, swollen, mobile finger with a large rounded tooth at the base, immobile finger with two larger rounded and several smaller ones; smaller hand slightly roughened externally, fingers slender, armed with a few minute acute teeth. Breadth of carapace 15/16ths inch; length 9/16ths inch.

Port Denison.

This species resembles *O. frontalis* of Milne-Edwards, but there is no transverse groove on the front besides that which separates the two margins characteristic of the genus.

Genus Pilumnus, Leach.

Carapace thick, convex, slightly broader than long, front inclined. Antero-lateral margin shorter than the postero-lateral, dentate. Orbits often denticulated. Basal joint of the external antennæ short, not quite reaching to the front, flagellum entering

the inner orbital hiatus. Anterior legs robust, usually spinose or denticulated. Ambulatory legs of moderate length, not cristate.

109. **Pilumnus vespertilio.** A.M.

Cancer vespertilio, Fabr., Ent. Syst., ii., p. 463 (1793).

Pilumnus vespertilio, M.-Edw., Hist. Nat. Crust., i., p. 418, (1834).

Carapace entirely covered with long brown (or cinereous) hairs. Latero-anterior margins with three large spines placed in the same line, and a fourth smaller spine upon the pterygostomian region. Upper and external surface of the hands granulated, lower portion of the hand smooth.

Common on coral reefs in Australia, the Melanesian Islands, etc: Said also to have been found in New Zealand.

110. **Pilumnus monilifera.** Plate 1, fig. 3. A.M.

Pilumnus monilifera, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Surface convex, smooth, regions faintly defined. Front divided by a deep notch into two prominent rounded lobes with granulated margins, A conical tooth between the front and the internal orbital hiatus. Borders of the orbit with a series of prominent granules. Antero-lateral borders with four teeth, of which the first is inconspicuous, each tooth capped by a cluster of granules. A cluster of three or four granules situated close together on either side of the middle line between and rather behind the orbits; an oblique row of prominent granules on either side near the lateral border, continuous behind with the granules of the third lateral tooth; a short row of three or four granules behind this near the fourth lateral tooth. Anterior legs very large, the left a little larger than the right. Carpus, propodos, and base of dactylos covered with prominent granules. Carapace and limbs covered with a short close pubescence. Length of carapace $\frac{5}{8}$ths in.; breadth 13/16ths in.

Tasmania.

111. **Pilumnus lanatus.**

Pilumnus lanatus, Latr., Encycl., t. x., p. 125; Milne-Edwards, Hist. Nat. Crust., t. i., p. 419.

Carapace and legs tomentose; three simple nearly conical teeth terminating in a harder or scaly point, on each side of the test, behind the post-ocular tooth. Notch in the middle of the front angular, the two adjacent lobes perfectly rounded with the border granulated. Right chelipede the larger; fingers blackish, those of the larger chelipede striated. [*Latr.*]

Australia and the East Indies (Mus. Paris).

Milne-Edwards describes this species as having the carapace little or not at all granular. I cannot identify it with any of the species known to me.

112. Pilumnus rufopunctatus. A.M.

Pilumnus rufopunctatus, Stimpson, Proc. Acad. Nat. Sci. Philad., Vol. x., sp. 90; Heller, Reise der Novara, Crust., p. 23.

Body and chelipedes tomentose above; legs hirsute. Carapace broad, smooth behind, areolate in front and ornamented with about twenty small subspiniform red tubercles, three of them being approximated in the middle line. Antero-lateral margin with five teeth, the first (or angle of the orbit) inconspicuous, the second inferior, on the sub-hepatic region; the third distant from the angle of the orbit; the three posterior rather conspicuous. Front rather narrow, the margin denticulate, scarcely emarginate in the middle. Orbit with the upper margin three to four-toothed; the lower six-toothed. Chelipedes robust, the carpus and the hand sparsely granulated above and externally, the granules prominent; the larger hand smooth below. [*St.*]

Port Jackson; Port Stephens; Griffiths' Point, Western Port. (W. A. H.)

The frontal lobes in this species vary very much in their degree of prominence.

113. Pilumnus fimbriatus. Plate i., fig. 4. A.M.

Pilumnus fimbriatus, Milne-Edwards, Hist. Nat. Crust., t. i., p. 416.

Carapace little convex, without spines on the antero-lateral borders; the regions more distinct than in the following species, scarcely hairy above, but ornamented all round with a border of long silky hairs. Legs ornamented with long hairs, but on their

borders only. Lower orbital border feebly incised externally; third joint of the external maxillipedes scarcely truncate. Length five lines. [*M.-E.*]

Australia (Mus. Paris); Port Molle, on coral reefs. (W.A.H.)

I refer to this species a *Pilumnus* obtained on the reefs at Port Molle, which conforms pretty well to Milne-Edwards' brief description. The antero-lateral regions of the carapace and the chelipedes are ornamented with numerous granulations. The hairs on the edges of the carapace are not very numerous, but very long (about $\frac{3}{4}$ths of an inch); the merus of the ambulatory legs has a thin entire crest above. This species belongs to the same section of the genus as *P. inermis*.

114. Pilumnus tomentosus.

Pilumnus tomentosus, M.-Edw., Hist. Nat. Crust., i., p. 418.

Differs from *P. vespertilio* only in having granulations on all the lower portion of the hand, and by the character of the hairs which constitute a sort of very short fur; body blackish brown; fingers blackish. [*M.-E.*]

Australia.

115. Pilumnus cursor.

Pilumnus cursor, A. M.-Edw., Nouv. Arch. du Mus., t. ix., p. 244, pl. ix., fig. 4.

Carapace sub-quadrilateral, little convex, slightly granular and covered with a short pubescence. Regions scarcely indicated. Front formed of two rounded deflexed and prominent lobes, separated from the orbital angles by a fissure. Antero-lateral borders armed with three sharp spines situated behind the external orbital angle. Postero-lateral borders nearly straight. Anterior legs with long scattered hairs. Large hand, granular above and externally, smooth and glabrous below and near the base of the immobile finger. Small hand entirely covered with hairs and granulations. Ambulatory legs slender and covered with long hairs. [*A. M.-E.*]

Port Molle. (W.A.H.) Found previously at New Caledonia and Upolu.

116. Pilumnus terræ-reginæ. Plate i., fig. 5. A.M.

Pilumnus terræ-reginæ, Haswell, l. c.

Carapace convex, ornamented with scattered stiffish hairs, a patch of small granulations on the mesobranchial regions, and a few others on the gastric region. Front rather deeply incised. Antero-lateral borders with three prominent acute spiniform teeth behind the orbital angle. Carpus of chelipedes with a few granules on the outer surface, more prominent on the smaller chelipede; hand ornamented with numerous rounded granules externally, more prominent and pointed on the smaller hand; a row of obscure granules on the lower border of the merus and hand of the smaller chelipede; two or three obsolescent granules in the same position in the larger chelipede. Ambulatory legs with scattered stiffish hairs. Length 7/16ths inch; breadth 4/16ths. Colour reddish purple on the carapace; light red on the legs; fingers brown.

Port Molle. (W. A. H.)

The nearest ally of this species appears to be *P. purpureus*, A. Milne-Edwards, from which it is mainly distinguished by having the granulations on the carapace always numerous and small, instead of few and large.

117. Pilumnus vestitus. A.M.

Pilumnus vestitus, Haswell, l. c.

Allied to the preceding, and resembling it exactly in the form of the front and the arrangement of the lateral spines or teeth; but distinguished from it by having the surface without distinct granules, and by having the tubercles of the chelipedes few in number and mostly spiniform. Carapace and legs covered with stiff yellow hairs. Surface of carapace mottled with red or purple. Fingers dark brown. Length 9/16ths of an inch; breadth 11/16ths.

Port Jackson; Port Stephens.

118. Pilumnus fissifrons. Plate i., fig. 6.

Pilumnus fissifrons, Stimpson, l. c., sp. 91; Heller, Reise der Novara, Crust., p. 24.

Body and feet densely and shortly pubescent. Carapace rather convex. areolate anteriorly, bituberculate on both sides;

the areolets pubescent, very distinct; the sulci smooth. Surface below the hairs smooth. Antero-lateral margin with the teeth normal, the second sub-hepatic, the three posterior prominent, acute. Front deeply emarginate or bilobed, the lobes prominent. Orbit with the upper border bi-emarginate, the inferior border crenulate, the internal angle dentiform, prominent. Chelipedes unequal, minutely tuberculate above, hand smooth below. [*Stimps.*]

Port Jackson.

119. **Pilumnus hirsutus.** A.M.

Pilumnus hirsutus, Stimpson, Proc. Acad. Nat. Sci., Philad., p. 37 (1858); Miers, Ann. and Mag. Nat. Hist., 1879, p. 31.

Carapace slightly convex, smooth in the middle and behind, faintly granular in front. Antero-lateral border with three acute spiniform teeth. Chelipedes very unequal, the right the larger; an acute spine on the inner surface of the wrist, outer surface of wrist granular; hand of larger chelipede granular above, smooth externally; hand of smaller chelipede granular externally. Ambulatory legs very long, the merus with 3–4 spines on its upper border.

Off Holborn Island, 20 fath.

A variety of this species (?) from the same locality has the tubercles on the hands less numerous and less prominent.

120. **Pilumnus glaberrimus.** A.M.

Pilumnus glaberrimus, Haswell, l. c.

Carapace nearly square, convex, postero-lateral borders nearly parallel, upper surface smooth, glabrous, with a very few scattered punctations; no trace of divisional lines. Front nearly straight, almost entire, but with a very minute mesial notch. Antero-lateral margins rather prominent, with four very obscure low lobes. Orbital borders without teeth. Merus joint of anterior limbs smooth, triquetrous, with two acute teeth at its distal end above; carpus smooth internally and externally, finely granulous above, its internal and distal angle slightly produced, propodos much larger in the male than in the female, finely and closely granular above, its outer surface, in the female, with two regular longitudinal rows of granules, and below close to the

inferior margin, an acute ridge, which is continued to near the extremity of the immobile finger. Borders of the carapace in the male smooth, or with a few irregular granules. Abdomen and limbs lined with fringes of long hairs.

Port Jackson.

121. Pilumnus inermis. A.M.

Pilumnus inermis, Haswell, l. c.

Carapace slightly convex, postero-lateral borders converging, surface smooth behind and in the centre, finely granular on the front and near the antero-lateral margins. Front convex, entire, with a slight mesial groove above. Orbital margins not toothed. Antero-lateral margins with three very obscure notches. Anterior limbs with the hand much larger in the male than in the female, very broad in the former, finely and closely granulous above, nearly smooth externally, but with a few obscure granules and a low longitudinal ridge near the lower margin; in the female finely granular above, on the proximal portion of the outer surface and below, and with a longitudinal row of granules on the outer surface close to the lower border, becoming a well-marked entire ridge on the immobile finger. Anterior granular portion and anterior border of carapace, granular portion of anterior legs and borders of ambulatory legs clothed with long hairs. Length of carapace 5/16ths inch; breadth ¼ths inch.

Port Jackson.

Genus PILUMNOPEUS, A. M.-Edw.

Resembles *Pilumnus*, but the carapace and legs are without the long hairs so characteristic of that genus, the teeth of the antero-lateral margin are broad (never spinous), and there is an external orbital hiatus as in *Panopeus*.

122. Pilumnopeus serratifrons. Plate ii., fig. 1. A.M.

Oxius ? serratifrons, Kinahan, Journ. Roy. Dublin Soc., i., p. 113, pl. iv., fig. 1 (1856); Miers, Cat. Crust. N.Z., p. 20 (1876).

? Heteropanope australiensis, Stimpson, Proc. Acad. Nat. Sci. Philad., Vol. x., sp. 87 (1858).

Carapace very convex, both in the transverse and the antero-postrior direction, much deflexed in front; regions well defined; surface with four transverse granular ridges, one crossing each of the hepatic and epi-branchial regions, and one on each meso-branchial region; meta-branchial regions granulated laterally. Front granular, very prominent, bilobed, the lobes rounded, and separated by an angular cleft. Orbital margin granular above and with two slight fissures, a deep fissure below the external angle, external to which on the pterygostomial region is a tubercular eminence. Internal orbital angle prominent, dentiform. Antero-lateral borders acute, four-lobed, the first two lobes low and broad, the last two narrower, tooth-like and subacute; all margined with granules. Arm with an acute spine above at its distal extremity. Wrist granular, with an acute spine at its antero-internal angle with a low blunt prominence below it. Hand granular, very broad, the right larger than the left; fingers of the former very stout, the mobile one with two broad teeth, the immobile one with two rounded teeth and a few small tubercles; fingers of left hand more slender than those of right, and with more numerous and smaller teeth. Ambulatory legs hairy. Length 15/16ths inch; breadth 1¼ inch.

Port Philip; Port Jackson. Found also in New Zealand.

The size of the frontal lobes varies much in different individuals.

Genus HEXAPUS, De Haan.

Carapace dilated-quadrate, convex in the middle. Antennæ very short. Anterior legs short and thick. Ambulatory legs only six in number. Abdomen of the male seven-jointed.

123. Hexapus sexpes. A.M.

Cancer sexpes, Fabr., Entom. Syst. Suppl., p. 344.

Hexapus sexpes, De Haan, Faun. Jap., Crust., p. 63, pl. xi., fig. 6; A. Milne-Edwards, Nouv. Arch. du Mus., t. ix., 253, pl. xii., fig. 1.

Carapace very wide; antero-lateral borders arched, regions indistinct, sides very finely granulated, a granular line extending from the external orbital angle to the base of the last pair of legs. On each side of the buccal orifice are five or six small

parallel crests. Surface covered with a short pubescence. Ocular peduncles thick and little mobile. Ambulatory legs thick and strong, last pair the largest.

Port Jackson; Port Stephens; dredged in a few fathoms. Found also in Japan and New Caledonia.

Genus Melia, Latr.

Carapace sub-quadrate, almost flat; front broad, the eyes situated towards the angles. Basal joint of the antennæ cylindrical, not reaching the front. Ambulatory legs slender.

124. Melia ? brevipes. Plate i., fig. 7. A.M.

Melia ? brevipes, Haswell, l. c.

Carapace smooth, broader than long, convex, especially in its anterior half. Front not deflexed, margin entire, slightly arched. Lateral borders slightly arched anteriorly, with an acute tooth directed forward near the antero-lateral angle. Third joint of the external maxillipede notched at its antero-internal angle for articulation with the fourth joint. Anterior legs stout, wrist with an acute tooth internally; hand smooth, with a deep groove close to its lower border at the distal extremity; upper finger also canaliculated externally. Ambulatory legs rather short, smooth, and with a few hairs above and below. Length 7/16ths inch; breadth ½ inch.

Griffiths' Point, Western Port. (W.A.H.)

Genus Actumnus, Dana.

Carapace a little transverse, very convex, the surface curving downwards anteriorly and at the sides. Basal joint of the antennæ only joining a process of the front. Fingers spoon-excavate.

125. Actumnus pugilator. A.M.

Actumnus pugilator, A. M.-Edw., Nouv. Arch. du Mus., ix., p. 195, pl. vii., fig. 1.

Carapace narrow, very convex and smooth; regions distinct; front bilobed, deflexed and rounded in front. Antero-lateral borders divided into three principal teeth (without reckoning the orbital angle) in front of which is a small denticle. Larger chelipede short and very massive; hand with a series of five

large, regularly arranged, pearl-like tubercles on its upper border; with five very prominent longitudinal crests externally, separated by deep grooves, and each ornamented with a row of close-set tubercles; and with isolated granulations on the under surface. Fingers very short and granular; carpus with a row of granulations, and with other scattered tubercles on its upper surface. Ambulatory legs smooth. [*A. M.-Edw.*]

Darnley Island (Macleay Museum), Port Molle, fourteen fathoms (W. A. H., H.M.S. "*Alert.*"). Found originally in New Caledonia.

Unlike that described by Milne-Edwards, the Australian specimens have the anterior portion of the carapace tomentose, and the ambulatory legs are ornamented above with rows of strong hairs.

126. **Actumnus tomentosus.** A.M.

Actumnus tomentosus, Dana, U.S. Explor. Exped., Crust., i., p. 244, pl. xiv., fig. 2.

Carapace narrow, very convex and sub-globular, very minute tomentose, anterior portion in part faint areolate; front emarginate; antero-lateral margin very short, four-lobed; postero-lateral margin concave, smooth. Anterior feet stout, sub-equal, tomentose like the carapace, minutely tuberculate; fingers short, not gaping. Last pair of legs sub-dorsal.

Albany Passage, near Cape York. (W. A. H.)

Sub-Family Eriphiinæ.

Orbit well closed below, without internal hiatus, basal joint of the antennæ altogether excluded from the orbit. Carapace either a little transverse or sub-quadrate.

Genus RUPPELLIA, Edwards.

Carapace rather broad. Flagellum of the antennæ very little removed from the orbit. Third joint of the external maxillipedes a little transverse.

127. **Ruppellia annulipes.** A.M.

Ruppellia annulipes, Edwards, Hist. Nat. Crust., t. i., p. 422.

? Ruppellia annulipes ? Dana, U. S. Explor. Exped., Crust., Vol. i., p. 246, pl. xiv., fig. 4.

No fissures nor teeth on the superior and inferior borders of the orbit. Front much inclined downwards, less deeply toothed than in *R. tenax*, and marked with a small transverse groove; a small horizontal crest on the teeth of the antero-lateral borders of the carapace; anterior legs smooth. Length ten lines; Colour whitish, with rose-coloured bands on the legs. [*M.-Edw.*]

Woodlark Island, Louisiade Archipelago.

The present specimen agrees in all points with Milne-Edwards' description (except that the colouring is entirely lost); it differs from Dana's figure in having no distinct line running inwards from the last tooth of the antero-lateral margin.

Genus PARARUPPELLIA, Haswell.

Carapace as in *Ruppellia*. Basal joint of the antennæ extremely short, not nearly reaching the front; second joint stout, touching the front; flagellum entirely excluded from the orbit by the union of the lower orbital border with the front.

128. Pararupellia saxicola. A.M.

Pararupellia saxicola, Haswell, l. c.

Carapace convex, very minutely granular. Front prominent, sex-dentate, the two median teeth more prominent and much broader than the lateral, truncate. Orbital margin finely granular; upper border with two fissures, an obtuse lobe at its inner end; outer angle with two blunt teeth; lower border with a rounded lobe near its inner angle. Antero-lateral margin thin, granular, divided by two wide notches into three low broad lobes, of which the first is the narrowest and the second the broadest; behind this a prominent acute tooth directed forwards and outwards, its anterior border continued on the carapace as a granular ridge for a short distance. Anterior legs extremely large and swollen in the male; wrist minutely granular and punctate, with a few larger granules on its distal border, a strong tooth-like process at its inner and distal angle; hands unequal, the larger (in the male) longer than the carapace, the breadth about half the length, minutely granular and punctate above, punctate alone below; a row of punctations forming a longitudinal groove on the lower and distal portion of the outer surface of the hand, continued on the immobile finger; mobile

finger finely granular above close to its insertion, with a short groove on either side; a rounded lobe at the base of the cutting edge, and four or five low teeth; immobile finger with a large lobe and one or two low rounded teeth; fingers of smaller hand each with a row of sub-equal rounded teeth. Ambulatory legs hairy on the borders. Length of carapace 2½ in.; breadth 3 in.

Port Essington, collected by Mr. Alex. Morton; Port Curtis, common under stones; Port Molle (W. A. H.)

Genus ERIPHIA, Latr.

Carapace narrow, convex, front generally much deflexed. Flagellum of antennæ far removed from the orbit. Third joint of the external maxillipedes a little transverse.

129. **Eriphia lævimana.** A.M.

Eriphia lævimana, Latr.; Guérin, Icon. Cr., p. 111, fig. 1; M.-Edw., Hist. Nat. Crust., i., p. 427 (1834); Dana, U.S. Explor. Exped., Crust., i., p. 249, pl. xiv., fig. 7; A. M.-Edw., Nouv. Arch. du Mus., t. ix., p. 255; Miers, Ann. Mag. N.H. (5), v., p. 13, (1880).

Eriphia trapeziformis, Hess, Arch. f. Naturg. xxxi., p. 135, pl. vi., fig. 4 (1865).

Very thick. Carapace anteriorly much deflexed; antero-lateral region not areolated in any part, granulous; front between the antennæ two-lobed, 3-4-toothed, teeth short, obtuse; orbital margin above denticulate, externally bi-dentate, antero-lateral margin with five or six teeth (teeth of orbit excluded), teeth small, hardly acute, the posterior granuliform. Anterior feet very stout, unequal, nude, smooth, both fingers of large hand having a very stout basal tooth.

Port Darwin; Port Denison, etc.

Genus TRAPEZIA, Latr.

Carapace sub-quadrate, plane, smooth; front horizontal with 6-8-teeth, or sinuous; lateral borders longitudinal. Tarsi not unguiculate, minutely spinulose. Arm extending far beyond the carapace.

130. **Trapezia cymodoce.** A.M.

Cancer cymodoce, Herbst, Krabben und Krebse, iii. (2), p. 22, pl. li., fig. 5 (1801).

Trapezia dentifrons, Latr., Encycl. Méthod., x., p. 695 (1825); M.-Edw., Hist. Nat. Crust., i., p. 428 (1834).

Trapezia hirtipes, Jacq. & Lucas, Voy. Pôle Sud, Zool., iii., Crust., p. 44, pl. iv., fig. 14 (1853).

Trapezia cœrulea, Heller, Sitzungsb. Berlin Akad., p. 348 (1861), nec Rüppell.

Trapezia cymodoce, Miers, Ann. and Mag. Nat. Hist. (5), Vol. ii., p. 409.

Carapace without red spots or reticulating lines. Front with six more or less distinct teeth. Lateral margin with an acute spine in the middle. Hand sub-cristate above and below and hairy on its outer surface.

Port Denison; Claremont Islands.

Family III. PORTUNIDÆ.

Carapace depressed, usually more or less hexagonal in shape, never very convex. Antero-lateral margins with well-defined acute teeth. Inner ramus of the first (innermost) pair of maxillipedes with an internal lobe. Margin of the efferent branchial channel usually defined by a longitudinal ridge on each side of the prelabial plate or palate. Fifth pair of ambulatory legs natatorial, their terminal joint oval, expanded, and lamellate.

Genus NEPTUNUS, De Haan.

Carapace very wide, with transverse granulous lines. Latero-anterior margins with nine or more teeth (including the external orbital angle), the last tooth much the longest. Front wide and divided into five or six teeth. Flagellum of external antennæ placed in the internal orbital hiatus. External maxillipedes short. Anterior legs long, arm with acute tubercles upon the anterior margin; hand nearly prismatic, with longitudinal ridges giving rise above to spiniform tubercles. Thigh of the swimming legs with the lower margin usually destitute of spines.

131. **Neptunus pelagicus.** A.M.

Cancer pelagicus, Linn., Syst. Nat., (ed. xii.) p. 1042 (1766).

Lupea pelagica, M.-Edw., Hist. Nat. Crust., i., p. 450 (1834).

Neptunus pelagicus, A. M.-Edw. (part), Archiv. Mus. Hist. Nat., x., p. 320 (1861); Miers, Ann. Mag. Nat. Hist. (4), xvii., p. 221 (1866); Cat. Crust. N.Z., p. 25 (1876).

Carapace wide, with very coarse granulations, without tubercles on the gastric and cardiac regions. Teeth of the lateral margins short, wide at the base, ninth epibranchial spine long, acute. Front six-toothed, the median teeth smaller but never obsolete. Orbits divided above into three lobes by two deep fissures, the middle lobe with a small spine at its external angle. Anterior legs very long and slender. Anterior margin of the arm with three, four, or even five spines; there is also a single spine at the extremity of the posterior margin. Wrist with an acute spine upon its inner, and a similar smaller spine upon its outer surface. Hand usually very long and slender. with three spines, two placed above the base of the mobile finger, and one over the articulation of the hand with the wrist.

Eastern Australia. A common species in the Sydney market. Very widely distributed in the Oriental Region.

132. **Neptunus sanguinolentus.**

Cancer sanguinolentus, Herbst, Krabben u. Krebse, i., p. 161, pl. viii., figs. 56-57 (1796).

Portunus sanguinolentus, Fabr., Ent. Syst. Suppl., p. 367 (1798).

Lupea sanguinolenta, M.-Edw., Hist. Nat. Crust., i., p. 451 (1834); Règne animal de C., Atlas, pl. x., fig. 1.

Neptunus sanguinolentas, A. M.-Edw., Nouv. Arch. du Mus., x., p. 319 (1861); Miers, Cat. N.Z. Crust., p. 26 (1876).

Carapace slightly convex, finely granulous, with moderately prominent lines upon the gastric region. Latero-anterior margins very long and oblique, lateral spine very long and acute. Front with six teeth, the two middle very small, the next long and acute, the outermost short and obtuse. Orbital margin straight, with two small fissures. Anterior legs long and slender, arm with three or four spines upon the anterior margin, but without a spine at the extremity of the posterior margin. Wrist with a

spine on its outer surface, and a larger one at its antero-internal angle. Hands with two spines above, one on the inner margin above the base of the mobile finger, and another on the outer margin above the articulation with the wrist. Ambulatory legs flattened, and of moderate length. Colour reddish yellow, with three large circular spots of bright red with a pale margin on the posterior half of the carapace, and others upon the legs.

Port Jackson; Moreton Bay, etc. Found also in New Zealand, and throughout the Indian Ocean and Eastern Archipelago.

133. Neptunus tomentosus. A.M.

Neptunus tomentosus, Haswell, l. c.

Carapace slightly convex, finely granular and short-tomentose; shape approaching that of *Amphitrite;* breadth about once and a half the length. Front quadridentate, the teeth rounded, the median rather more prominent and rather narrower than the outer, separated by a deep fissure. Upper orbital margin with two fissures. Antero-lateral borders with eight acute forward-curved teeth, the last nearly twice as long as the others. Anterior border of arm with three acute teeth; posterior border unarmed. Wrist strongly ridged, with a very long acute spine internally, and two short acute spines externally; hand strongly ridged, with one spine at the base, and two above the articulation of the mobile finger. Fingers of both hands with small sub-equal teeth.

Port Jackson.

This species is closely allied to *Lupa pubescens* of Dana (U.S. Explor. Exped., Crust., i., p. 274, pl. xvi., fig. 9), but differs from it in having the frontal teeth rounded, the median pair being a little more prominent than the others, in having the last tooth of the lateral margin relatively shorter, and in wanting the stout basal tooth on the mobile finger.

Genus Scylla, De Haan.

Carapace very wide, and rather convex. Latero-anterior margins with nine teeth, the ninth similar to the preceding. Basal joint of the external antennæ large, flagellum inserted in the internal orbital hiatus. Epistome well developed, anterior

margin of the buccal cavity separated by a transverse groove from the posterior margin of the antennary region. Anterior legs short and robust; hand without longitudinal ridges.

134. **Scylla serrata.** A.M.

Cancer serratus, Forskäl.

Cancer olivaceus, Herbst, Krabben u. Krebse, ii., p. 157, pl. xxxviii., fig. 3 (1796),

Portunus tranquebaricus, Fabr., Ent. Syst., Suppl., p. 366 (1798).

Lupea tranquebarica, M.-Edw., Hist. Nat. Crust., i., p. 448 (1834).

Lupea lobifrons, M.-Edw., Hist. Nat. Crust., i., p. 453 (1834).

Scylla serrata, De Haan, Faun. Japon., Crust., p. 44 (1834).

Scylla tranquebarica, Dana, U.S. Explor. Exped. xiii., Crust., part i., p. 270 (1852).

Scylla serrata, A. M.-Edw., Ann. Sci. Nat., xiv., (4) p. 252, pl. i., ii. (1860); Nouv. Arch. du Mus., x., p. 349 (1861); Miers, Cat. Crust. N.Z., p. 27 (1876).

Carapace convex, nearly smooth, very finely granulated; the lines on the gastric and branchial regions distinct. Latero-anterior margins very long. Front with six large flat teeth. Anterior legs very robust, arm trigonous, with three spines upon the anterior, and two upon the posterior margin. Wrist with an acute spine at its antero-internal angle, and two small spines upon its external surface. Hand very large, with three spines above, two above the base of the mobile finger, and one over the articulation with the wrist, Colour olive brown.

Port Jackson; Port Denison, etc. A species of very wide range, much used for food.

Genus Thalamita, Latreille.

Carapace almost quadrilateral and very wide. Frontal margin very broad, occupying with the orbits nearly the whole width of the carapace. Latero-anterior margins forming nearly a right angle with the front, with only four or five teeth. Basal joint of the external antennæ very large, flagellum excluded from the

orbit. Anterior legs armed with spines. Fifth pair of legs with a spine upon the inferior margin of the thigh.

135. Thalamita sima.

Thalamita sima, M.-Edw., Hist. Nat. Crust., i., p. 460 (1834); A. M.-Edw., Nouv. Arch. du Mus. ix., p. 359 (1861); Miers, Cat. Crust. N.Z., p. 28 (1876).

Thalamita arcuatus, De Haan, Faun. Japon., Crust., p. 43, pl. ii., fig. 2, and pl. xiii., fig. 1 (1835).

Carapace clothed with short hairs and with prominent naked transverse lines. Antero-lateral margins five-toothed, the fifth tooth slightly longer than the rest. Front four-toothed, the two median teeth very wide, and separated by a very narrow median fissure, the two lateral much smaller, with the front margin arcuate. Basal joint of the antennæ with a smooth entire ridge.

Eastern Coast.

136. Thalamita Stimpsoni. A.M.

Thalamita Stimpsoni, A. M.-Edw., Nouv. Arch. du Mus., t. x., p. 362, pl. xxxv., fig. 4.

Carapace with prominent transverse lines sometimes clothed with short hairs, sometimes nearly naked. Front with six broad rounded teeth (not including the internal orbital angle). Antero-lateral margins with five prominent acute teeth, of which the fourth is usually shorter than the rest. Basal joint of the antennæ with a granulated ridge.

Port Denison, etc. Found also in New Caledonia.

137. Thalamita prymna.

Cancer prymna, Herbst, Krabben u. Krebse, pl. lvii., fig. 2.

Thalamita prymna, Milne-Edwards, Hist. Nat. des Crust., i., p. 461; De Haan, Faun. Japon., Crust., p. 43, pl. xii., fig. 2; A. M.-Edw., Nouv. Arch. du Mus., t. x., p. 360.

Thalamita crassimana, Dana, U.S. Explor. Exped., Crust., i., p. 284, pl. xvii., fig. 4.

A near ally of the preceding, but distinguished from it by having a row of sharp spines on the basal joint of the antennæ.

138. **Thalamita crucifera.**

Portunus crucifer, Fabr., Suppl., p. 364; Herbst, pl. xxxviii., fig. 1; Latr., Hist. Nat. des Crust., t. vi., p. 34; Encycl., t. x., p. 191, etc.

Thalamita crucifera, M.-Edw., Hist. Nat. des Crust., t. i., p. 462.

Carapace smooth or a little ridged, and more than twice as long as its fronto-orbital border. Front deeply cleft and armed with eight large obtuse teeth. Lateral teeth short, broad, and as it were truncate; the first (that constituting the external orbital angle) cleft at the end so as to appear bifid. Hands nearly of the length of the carapace, and armed above with four thick spines; fingers deeply grooved and armed with thick compressed teeth. Colour reddish, with yellow spots and bands, of which the median represent a cross.

Port Jackson. Found also in the Indian Ocean.

Genus Nectocarcinus, A. M.-Edw.

Antero-lateral margins four-toothed, regions well-marked. Front prominent, entire or lobed. Orbits small. Basal joint of the external antennæ straight, narrow, and uniting with the front. Anterior legs short and robust. Abdomen of the male four-jointed.

139. **Nectocarcinus integrifrons.** A.M.

Portunus integrifrons, Latr., Encycl., x., p. 192 (1825); M.-Edw., Hist. Nat. Crust., i., p. 445 (1834).

Nectocarcinus melanodactylus, A. M.-Edw., Ann. Sci. Nat. (ser. 4), xiv., p. 220 (1860).

Nectocarcinus integrifrons, A. M.-Edw., Ann. Sci. Nat. (ser. 4), xiv., p. 220 (1860); Nouv. Arch. du Mus., x., p. 406, pl. xxxviii. (1861); Miers, Zool. "Erebus and Terror," Crust., p. 2, pl. i., fig. 3 (1874); Cat. Crust. N.Z., p. 30 (1876).

Carapace but slightly convex, and granulous. Regions distinctly defined. Front wide, arched, and entire. Antero-lateral margins with four teeth, of which the first is the widest, and the fourth small and acute. Anterior legs covered with squamous lines and closely placed granules; wrist with an acute spine;

hand not carinate; with a small spine above the base of the mobile finger. Fingers strongly carinate.

Port Jackson; Tasmania. Found also in New Zealand.

140. Nectocarcinus tuberculosus.

Nectocarcinus tuberculosus, A. M.-Edw., Ann. Sci. Nat. (4), t. xiv., p. 220; Miers, Zool. "Erebus and Terror," Crust., p. 2.

Distinguished by having numerous sub-spiniform tubercles on the anterior portions of the gastric and branchial regions, the hands, and carpi, and by having the front divided into two truncated, finely denticulated lobes. [*M.-E.*]

Tasmania.

Genus CAPHYRA, Guérin.

Carapace smooth above. External angle of the basal joint of the external antennæ prolonged into the internal orbital hiatus; flagellum excluded from the orbit. Internal antennæ folded almost transversely under the front, their basal joint very thick. Third joint of the external maxillipedes truncated for the insertion of the fourth joint. Fingers of the chelipedes with trenchant borders. Last pair of ambulatory legs elevated on the back, with the terminal joint sharp and a little hooked. [*A. M.-E.*]

141. Caphyra octodentata.

Caphyra octodentata, Haswell, l. c.

Carapace colourless, thin, smooth, and shining. Front notched mesially, divided into four pairs of teeth, of which one occupies the internal orbital angles, and is separated from the inner three by wide angular fissures. Antero-lateral borders with four acute teeth; a very obscure raised line crossing the carapace inwards and slightly backwards from the last tooth. Merus of chelipedes with three or four small acute teeth on its inner border; carpus with an acute prominent spine above; propodos carinated above, the carina divided into two teeth, of which the posterior is very acute; external surface of the propodos with an acute spine at its base.

Palm Island (east coast of Queensland), (Macleay Museum).

This species is allied to *C. lævis*, A. Milne-Edwards, but differs from it in having only four teeth on each lateral border; from *C. rotundifrons*, of the same author, it differs in having the front dentate, and from *C. polita*, Heller, in not having a ridge on the gastric region, besides other points.

Genus Lissocarcinus, White.

Carapace sub-orbicular, smooth, sub-porcellanous. Front produced. Basal joint of the antennæ short, the following joint scarcely remote from the orbit. Legs naked; the anterior pair short, the arm scarcely reaching beyond the carapace; hand very short.

142. Lissocarcinus polybioides. A.M.

Lissocarcinus polybioides, Adams & White, Voy. of H.M.S. "Samarang," Crust., p. 46, pl. xi., fig. 5.

Carapace five-sided, produced in front, narrowed behind, very smooth on the upper surface; a strong line extending from the antero-lateral angle across the carapace towards the middle line. Front lamellar, produced, obscurely emarginate, its sides straight. Antero-lateral margins with four well-marked teeth behind the external orbital angle. Anterior legs with the hand bicarinate above, the outer carina ending in a tooth.

Port Jackson.

Genus Amphitrite, De Haan.

Carapace rather narrow, the frontal and antero-lateral margins meeting at an angle which is usually spiniform, the antero-lateral rarely shorter than the postero-lateral. Flagellum of antennæ not exclnded from the orbit; basal joint thick, scarcely narrower than the orbital hiatus.

143. Amphitrite tenuipes. A.M.

Amphitrite tenuipes, De Haan, Faun. Jap., Crust., p. 39, pl. i., fig. 4.

Front with five teeth, the central one scarcely smaller than the rest. Teeth of the sides short. Posterior spine recurved. Arm with the internal carina 3-dentate; carpus uni-dentate on each side and at the apex; hand trigonal, bicostate externally.

Port Denison; Darnley Island.

144. Amphitrite gladiator.

Portunus gladiator, Fabr., Suppl.; Latr., Encycl., t. x., p. 189, etc.

Cancer menestho, Herbst, pl. lv., fig. 3.

Lupea gladiator, M.-Edw., Hist. Nat. Crust., t. i., p. 456.

Amphitrite gladiator, De Haan, Faun. Jap., Crust., p. 39, pl. i., fig. 5, and p. 65, pl. xviii., fig. 1.

Front with six teeth, the two median teeth lower. Lateral teeth acute. Arm quadri-dentate internally, carpus uni-dentate on each side and at the apex. Hand uni-costate internally, quinque-costate externally, transversely plicate below.

Palm Island.

Family IV. PLATYONYCHIDÆ.

Carapace rarely hexagonal, more or less rounded on the sides, often longer than broad. Teeth of the antero-lateral margins well-defined, acute. Inner ramus of the first pair of maxillipedes simple. Abdomen narrow at base. Margin of the efferent branchial channel not defined by a longitudinal ridge on each side of the pre-labial plate or palate. Fifth pair of legs natatorial, their terminal joint oval, expanded, and lamellate.

Genus PLATYONYCHUS, Latr.

Carapace broader than long, smooth above, antero-lateral margins regularly five-toothed. Front narrow, dentate, not produced. Orbits wide, with a large internal hiatus. Anterior legs large, the hands long, costate externally. Next three pairs of legs with the tarsi lanceolate, compressed.

145. Platyonychus bipustulatus. A.M.

Platyonychus bipustulatus, M.-Edw., Hist. Nat. Crust., i., p. 437, pl. xvii., figs. 7-10; A. M.-Edw., Nouv. Arch. du Mus., x., p. 413; Miers, Zool. "Erebus and Terror," Crust., p. 2, pl. i., fig. 1 (1874); Cat. Crust. N.Z., p. 32 (1876).

Anisopus punctatus, De Haan, Faun. Japon., Crust., p. 44, pl. ii., fig. 1 (1835).

Platyonychus purpureus, Dana, U.S. Explor. Exped., Crust., i., p. 291, pl. xviii., fig. 3 (1852).

Antero-lateral margin with five wide teeth. Front with four small teeth, the middle ones more prominent than the lateral. Wrist with a spine at its antero-internal angle. Hand strongly carinate, the carinæ granulous, with a small spine above the middle finger on the inner side. Colour yellowish, with very close purple punctuations on the hinder part of the branchial and hepatic regions.

Port Jackson, etc. Found also in New Zealand, the Indian and Japanese Seas, and the Coast of China.

Family V. TELPHUSIDÆ.

General shape of the carapace as in the *Grapsoidea*. Front broad. Borders arched. Inhabitants of fresh water.

Genus TELPHUSA, Latr.

Third joint of the external maxillipedes sub-quadrate, much shorter than the second, the fourth joint inserted at its internal apical angle.

146. Telphusa transversa. A.M.

Telphusa transversa, E. von Martens, Monatsber. Akad. Wiss. Berl., 1868, p. 609.

Carapace notably broader than long, swollen, thickly punctate, with only faint traces of a post-frontal crest. Frontal border only slightly concave in the middle. Behind the dentiform external orbital angle only one small blunt tooth; the rest of the lateral border scarcely notably carinated; the oblique grooves begin in the middle of its length. Abdomen of the male narrowing tolerably regularly; the ante-penultimate joint with converging, and only the penultimate with parallel lateral borders; the last joint somewhat broader than long. Hands without furrows at ridges; a few obscure tubercles on the upper border of the palmar portion; the impressed points on the sides of the fingers arranged in longitudinal rows. Fingers not gaping. [*E. von M.*]

Cape York (Dämel); Thursday Isld. (W. A. H.)

Family VI. GONOPLACIDÆ.

Carapace transverse. Front longer than the fourth part of the breadth of the carapace, little deflexed, lamellate. Internal

antennæ transverse. Second joint of the abdomen of the male narrower than the contiguous part of the sternum.

Fourth joint of the external maxillipedes inserted at the internal angle of the third joint. [*D.*]

Genus Eucrate, De Haan.

Carapace arcuate anteriorly, scarcely sloping downwards. Verges of the male inserted on the sternum, and hidden by the abdomen. Anterior legs of the male short, thick. Eyes short. Abdomen of the male 5-jointed, scarcely narrower towards the base than the contiguous part of the sternum. [*D.*]

147. Eucrate affinis. A.M.

Eucrate affinis, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Carapace smooth, convex; a faint mesial frontal furrow bifurcated behind so as to bound the anterior portion of the protogastric region; two slight ridge-like elevations near the antero-lateral border, and another running obliquely parallel to the postero-lateral border. Front straight, faintly notched in the middle. Inner orbital angle acute. Antero-lateral borders with four teeth, each of which is carinated. Anterior legs (in the male) dilated; arm with a strong tooth above near its distal end, separated distally by a transverse groove from a second lower transverse elevation; wrist with a small tooth at the distal and internal angle, very hairy externally; hand smooth, with a longitudinal ridge close to the inferior border, and two rounded elevations between the bases of the fingers. Ambulatory legs long and slender, the three terminal joints hairy above and below. Length $\frac{4}{5}$ths inch; breadth $\frac{1}{2}$ inch.

Off Holborn Island, near Port Denison, 20 fathoms.

This species is a near ally of *E. crenatus*, De Haan, but is distinguished from it by the presence of the short ridges on the lateral portions of the carapace, by the shape of the lateral teeth, and the acuteness of the internal orbital angle.

148. Eucrate sexdentatus. A.M.

Eucrate sexdentatus, Haswell, l. c.

Carapace convex, faintly granular at the sides, without ridges or grooves. Front as in the preceding species. Internal orbital

angle not conspicuous. Antero-lateral margin three-toothed, teeth not carinated, the last spinous, separated by a slight interval from the second. Anterior legs nearly as in the preceding species, but the second elevation on the upper border of the arm inconspicuous, and the tooth on the wrist more prominent and acute; ambulatory legs with fewer and shorter hairs. Carapace with about twenty red spots. Length $\frac{3}{8}$ths inch; breadth 7/16ths.

Off Holborn Island, Port Denison, 20 fath.

Sub-Tribe CATAMETOPA or GRAPSOIDEA.

Carapace broad in front, often sub-quadrate, sometimes sub-globose, transverse or arcuate anteriorly, never rostrate. Branchiæ usually fewer than nine in number. Epistome very short, often almost linear. Efferent channel as in the *Oxyrhyncha*. Fourth joint of the external maxillipedes inserted at the apex or at the antero-external angle of the third joint. Male genital appendages either inserted in the sternum itself, or in the basal joint of the last pair of legs, thence lying in a channel in the sternum. [*D.*]

Family I. MACROPHTHALMIDÆ.

Carapace subquadrate, generally transverse, broadest in front, with the anterior angles acute, the sides not arcuate. Eyes not shorter than one-third of the width of the carapace. Internal antennæ transverse, or longitudinal. Third joint of the external maxillipedes never marked with an oblique piliferous crest. Second joint of the abdomen in the male narrower than the adjacent part of the sternum. [*D.*]

Sub-Family Macrophthalminæ.

Internal antennæ transverse, placed beneath the front. External antennæ applied to the base of the front. Fourth joint of the external antennæ not concealed. [*D.*]

Genus MACROPHTHALMUS, Latr.

Carapace broad, transversely rectangular. Front very narrow. Eyes very long. Third joint of the external maxillipedes much shorter than the second. Chelipedes not twice the length of the carapace.

149. Macrophthalmus podophthalmus. A.M.

Macrophthalmus podophthalmus, Eydoux et Souleyet, Voy. de la Bonité, Crust., pl. 3, fig. 6; Milne-Edwards, Ann. des Sci. Nat., (3me. série) t. xviii., p. 155.

Eye-stalks extending beyond the external orbital angle by about half their length. Carapace broad, slightly granulated on the branchial regions. Front rather broad, more than one-fourth of the total breadth. Lateral borders with three spinous teeth. Anterior legs in female small, smooth. [*M.-E.*]

Holborn Island, near Port Denison. Found originally at the Sandwich Islands.

150. Macrophthalmus carinimanus. A.M.

Macrophthalmus carinimanus, M.-Edw., Hist. Nat. Crust., t. ii., p. 65; Ann. des Sci. Nat. (3me série) tome xviii., p. 156.

Carapace more than twice as broad as long, strongly grooved above, very granular, and having two verrucose tubercles on each branchial region. Eye peduncles scarcely as long as the orbits. Hands very long, rounded and granular above, and ornamented with a small linear crest on the lower part of their outer face. [*M.-E.*]

Holborn Island; Port Jackson. Found also at Pondicherry and the Isle of France.

151. Macrophthalmus affinis. A.M.

Macrophthalmus affinis, Guérin, Voy. de la Favorite, p. 171, pl. L., fig. 1; and Mag. de Zool., cl. vii., pl. 24, fig. 1 (1839); M.-Edw., Ann. des Sci. Nat. (3me série), t. xviii., p. 158 (1852).

A specimen from Holborn Island, which I refer with some doubt to this species, has the carapace sub-quadrate, a little broader than long and covered with granulations. The eye-stalks are a little shorter than the orbits, and the lateral borders are three-toothed, the third tooth being small. The anterior legs are rather short, the hands unarmed, smooth externally, and with a faint longitudinal linear depression close to the lower border, the fingers are nearly straight with scarcely any space between them when closed, the mobile finger has a broad low elevation on its inner border. There are fringes of hairs on the borders of the carapace and legs.

152. Macrophthalmus Verreauxi.

Macrophthalmus Verreauxi, M.-Edw., Ann. des Sci. Nat. (3me série), t. xviii., p. 155, pl. iv., fig. 25.

Eye-stalks extending beyond the external orbital angle by about half their length. Carapace very broad and distinctly granular on the branchial regions. Lateral teeth of the carapace flattened. Anterior legs of moderate length. [*M.-E.*]

Australia (Paris Museum).

This species is nearly allied to *M. podophthalmus*.

153. Macrophthalmus crassipes.

Macrophthalmus crassipes, Milne-Edwards, l. c., p. 157.

Nearly allied to *M. carinimanus*, but having the orbits directed more obliquely, and the anterior legs much shorter and thicker; a row of small granular tubercles along the upper border of the hand. [*M.-E.*]

Australia (Paris Museum).

154. Macrophthalmus setosus. A.M.

Macrophthalmus setosus, Milne-Edwards, l. c., p. 159.

Carapace broader than in *M. japonicus*, or *M. depressus*, the orbits oblique. Ambulatory legs, arm, and inner surface of the hands ornamented with long silky hairs. [*M.-E.*]

Australia (Paris Museum); Port Jackson, common.

155. Macrophthalmus convexus.

Macrophthalmus convexus, Stimpson, Proc. Acad. Nat. Sci. Philad., p. 97 (1858); Miers, Ann. and Mag. Nat Hist. (5) Vol. v., p. 307 (1880).

Carapace less than twice as broad as long, coarsely granulated on the sides, antero-lateral angles spiniform and prominent, a second tooth behind. Eye-peduncles not quite reaching to the end of the antero-lateral teeth; anterior legs in the male with the inner margins of the arm and wrist granulated, hand rounded and finely granulated on its upper margin, with a longitudinal granulated line on its outer surface close to the lower margin; lower finger deflexed, but not so abruptly as in *M. carinimanus*, and the fingers enclosing a much narrower space when closed.

Ambulatory legs with a very small spine, sometimes obsolete, near the distal end of the upper margin of the merus. Length 7 lines; breadth at second marginal tooth 13 lines. [*Miers.*]

Australia (Brit. Museum).

156. **Macrophthalmus latifrons.** A.M.

Macrophthalmus latifrons, Haswell, l. c.

Carapace about once and a half as broad as long; surface very finely granulate. Front broad, about one-fourth of the total breadth. Orbits nearly transverse. Lateral borders arched, with three teeth separated by deep fissures, the first two broad, the third small. Anterior limbs in the male very large, finely granular like the carapace; hand unarmed, with a granular raised line on the outer surface near the lower border. Immobile finger much bent downwards, regularly denticulated on its inner edge; inner edge of mobile finger with a denticulated elevation near the base. Inner surface of the arm, edge of carapace, and basal joints of legs, with scattered slender hairs; a thicker coating on the fourth and fifth joints of the ambulatory legs. Length of carapace $\frac{4}{5}$ths inch; greatest breadth $1\frac{1}{3}$th inch.

Port Philip.

Genus OMMATOCARCINUS, White.

Carapace much wider than long, the antero-lateral angles prolonged into a prominent, laterally-directed spine; interocular region narrow; eye peduncles very long. Third joint of the maxillipedes wider than long. Chelipedes more than twice the length of the carapace.

157. **Ommatocarcinus MacGillivrayi.**

Ommatocarcinus MacGillivrayi, White, Voy. of the "Rattlesnake," Append., p. 393, pl. v., fig. 1.

Carapace more than twice as wide as long. Eyes extending a little beyond the lateral spines. Chelipedes two and a half times the length of the carapace; arm long, trigonal, covered with papillæ above, and having a nearly obliterated spine about the middle; wrist smooth, roundish, with a large blunt tooth on the inside; hands somewhat flattened, widest at the base of the claws, with a broad ridge on the inside, the edge of it rough with

small papillæ, as is also the upper edge of the hand; fingers overlapping at the tips, irregularly toothed on the inside. [*White.*]

Port Curtis; mud banks.

Sub-Family Ocypodinæ.

Carapace very convex anteriorly. Front narrow. Internal antennæ longitudinally plicate. External antennæ placed at a short distance from the front. Fourth joint of the external maxillipedes exposed, third shorter than the second. [*M.*]

Genus Helœcius, Dana.

Internal antennæ longitudinal, inserted near the front on each side, external somewhat remote from the front. Third joint of the external maxillipedes shorter than the second. Anterior legs of the male sub-equal. Second and third joints of the external maxillipedes distinctly marked with a nearly longitudinal linear furrow. Second joint of the abdomen in the male scarcely narrower than the sternum. [*M.*]

158. **Helœcius cordiformis.**

Gelasimus cordiformis, M.-Edw., Hist. Nat. Crust., ii., p. 53.

Helœcius cordiformis, Dana, U.S. Explor. Exped., Crust., i., p. 320, pl. xix., fig. 6; Heller, Reise der Novara, Crustacea, p. 39; Miers, Cat. Crust. N.Z., p. 35.

Helœcius signatus, Hess, Arch. für Nat., Band xxxi., p. 145 (1865).

Helœcius areolatus, Heller, Verhandl. der K. K. Zool.-botan. Gesellsch. in Wien, Jahrg. 1862, Bd. xii., p. 519.

Helœcius inornatus, Dana, U.S. Explor. Exped., Crust., i., p. 321, pl. xix., fig. 7; Proc. Acad. Nat. Sci. Philad., 1851, v. 248.

Carapace convex, broad in front and narrowed posteriorly. Front slightly narrowed below. Lower orbital margin ceasing to be distinct before reaching the level of the external margin of the buccal cavity. Hand smooth, and as long as the carapace is broad, palm swollen and much longer than high, fingers shorter than the palm and spoon-excavate. Ambulatory legs smooth. Length ¾ in.; breadth 11/12ths. in.

Port Jackson; Tasmania. Found also in New Zealand.

Genus Gelasimus, Latr.

Eyes slender, cornea rather small, scarcely oblong. Second joint of the external maxillipedes much larger than the third. Anterior legs of the male extremely unequal. Smaller hand weak, with the fingers usually spoon-excavate or spatulate.

159. Gelasimus vocans.

Cancer vocans, Rumph., Amboin. Rareit. Kam., pl. x., fig. E (1705); Linné, Syst. Nat., 10th ed., 626.

Gelasimus vocans, M.-Edw., Mélanges Carcinologiques, p. 109, pl. iii., fig. 5; Annales des Sci. Nat., t. xviii., p. 145; A. M.-Edw., Nouv. Arch. du Mus., ix., p. 272; Miers, Ann. and Mag. Nat. Hist. (5), Vol. v., p. 308 (1880).

Front very narrow and little enlarged below. A strong triangular tooth near the distal end of the upper margin of the arm. Large hand granular externally, armed internally with two very strong, oblique crenulated crests; fingers much compressed, the trenchant border of the mobile finger regularly toothed that of the immobile finger is excavated near its base, and has always a strong triangular lobe or tooth near its distal extremity, with sometimes a second between this and the base.

Woodlark Islands, Louisiade Archipelago; Port Darwin.

160. Gelasimus arcuatus.

Ocypode (Gelasimus) arcuatus, De Haan, Faun. Jap., Crust., p. 53, pl. vii., fig. 2 (1835).

Gelasimus arcuatus, Milne-Edwards, Ann. des Sci. Nat., 3me. série, t. xviii., p. 146, pl. iii., fig. 8; A. M.-Edw., Nouv. Arch. du Mus., t. ix., p. 273; Miers, Ann. and Mag. Nat. Hist. (5), Vol. v., p. 309 (1880).

Carapace very narrow behind and convex above. Front narrower between the eyes, dilated below. Large hand much developed, the hand becoming very long, but gradually narrowing towards the end; mobile finger hooked at the extremity; immobile finger with a pretty strong tooth about the middle of its length; sometimes without prominent lobes; sometimes three times the length of the hand.

Port Darwin.

161. **Gelasimus Dussumieri.**

Gelasimus Dussumieri, Milne-Edwards, Ann. des Sci. Nat. 3me. série, t. xviii., p. 148, pl. iv., fig, 12; A. M.-Edw., Nouv. Arch. du Mus., t. ix., p. 274.

Distinguished from *G. arcuatus* by having the fingers relatively longer and more compressed, and the index with equal and regular granules on its trenchant border.

Moreton Bay; Port Darwin.

162. **Gelasimus coarctatus.**

Gelasimus coarctatus, Ann. des Sci. Nat. 3me. série, t. xviii., p. 146, pl. iii., fig. 6; A. M.-Edw., Nouv. Arch. du Mus., t. ix., p. 272, pl. xii., fig. 4.

Front narrow between the eyes and dilated below. Anterior border of the arm multi-denticulated; mobile finger regularly arched in nearly all its extent, but with the extremity, which terminates in an acute hook, applied for a certain distance against the immobile finger.

163. **Gelasimus forceps.**

Gelasimus forceps, M.-Edw., Hist. Nat. Crust., t. ii., p. 52; Ann. des Sci. Nat., 3me série, t. xviii., p. 148, pl. iii., fig. 11.

Front narrow, of equal breadth between the eyes and at its extremity. Two denticulated, sub-parallel lines on the inferior orbital lobe; a very prominent marginal crest on the meso-branchial lobe. Large hand smooth, fingers flattened, straight, longer than the palm. Posterior legs with the third joint very wide.

164. **Gelasimus signatus.**

Gelasimus signatus, Hess, Archiv für Naturg., Band xxxi., p. 146 (1865).

Forehead not quite so narrow between the eyes as in the following species; its lower border almost straight, Large hand almost once and a half as long as the carapace is broad. Arm, carpus, and hand bright red, fingers white. On the lower side of the arm two rows of pearl-like tubercles form a triangle. The fingers have an elevation in the middle of the inner border; at

the ends they are curved and pointed, the inner border is keeled. [*Hess.*]

Sydney (Göttingen Museum). The locality of this and the following species must be regarded as doubtful.

165. Gelasimus variatus.

Gelasimus variatus, Hess, l. c., p. 146, pl. vi., fig. 7.

Carapace smooth, strongly arched. Front narrow between the eyes. Large hand of the male somewhat longer than the body is broad; at the root of the immobile finger is a large triangular impression; immobile finger somewhat bent, the thumb straight, both beset with tubercles on the inner borber. Colour brownish with violet markings, or violet with bright yellow markings. [*Hess.*]

Sydney (Göttingen Museum).

Genus Ocypoda, Fabr.

Eyes thick, the cornea long, produced almost to the base of the peduncle. Second joint of the external maxillipedes much larger than the third. Anterior legs of the male unequal, the smaller with pointed fingers. Abdomen narrow at the base. Carapace transverse. [*D.*]

166. Ocypoda ceratophthalma. A.M.

Cancer ceratophthalma, Pallas, Spicil. Zool. fasc.

Oxypoda ceratophthalma, Fabr., Suppl., p. 247 (1798); Latr., Hist. Nat. des Crust.; Desmarest, Consid., p. 121, pl. xii., fig. 1; De Haan, Fauna Japonica, Crust., p. 29; Milne-Edwards, Hist. Nat. Crust., t. ii., p. 48; Atlas of the Règne Animal of Cuvier, Crust., pl. xvii., fig. 1; Ann. des Sci. Nat. 3me série, t. xviii., p. 141.

Terminal appendage of the eyes not setigerous, very long in the male, almost as long as the cornea, obtuse at the end, and extending far beyond the external orbital angle. Hands broad and compressed, not spinous.

Cape Grenville; Palm Island, etc.

167. Ocypoda Macleayana.

Ocypoda Macleayana, Hess, Archiv für Naturg., Band xxxi., p. 143, pl. vi., fig. 8 (1865).

Upper orbital border but slightly curved, almost straight. Cornea at the end of the peduncle overhung by a process of the latter. Anterior legs very small, hands smooth, fingers finely toothed; dactyli of the four posterior feet very long. Colour bright yellow, the thorax darker and spotted, each joint of the abdomen with two red spots; the legs with dark bands. [*Hess.*]

Sydney (Göttingen Museum).

Dr. Hess' description and figure would apply very well to the common New South Wales species of *Ocypoda*, but that in the latter the hands are never smooth, but granulated.

168. Ocypoda cordimana.

Ocypoda cordimana, Desmarest, Consid. sur les Crustacés, p. 121; Milne-Edwards, Hist. Nat. Crust., t. ii., p. 45; De Haan, Fauna Japon., Crust., p. 29; A. Milne-Edwards, Ann. des Sci. Nat. (5), xviii., p. 143.

Distinguished from *O. ceratophthalma* by (1) never having the ocular peduncles prolonged, (2) by having the carapace broader and more convex in the antero-posterior direction and more finely granular, (3) the superior orbital border less oblique, the external orbital angle reaching the line of the base of the front, (4) the anterior limbs more dilated and more finely granular, (5) the hand smooth internally, while that of *O. ceratophthalma* has a strong striated transverse crest.

Tropical coasts. Widely distributed.

Genus Crossonotus, A. Milne-Edwards.

Carapace discoidal and little convex. Front prominent, toothed, and not very broad. Orbits very large and directed forwards. Basal joint of the antennæ situated in the orbital hiatus and not joined to the front. Buccal cavity broad in front, its anterior border with two fissures on each side. Ischium of the external maxillipedes large, its supero-internal angle much prolonged; the merus very narrow. Chelipedes of the male unequal.

Ambulatory legs compressed. Abdomen of the male composed of seven joints. [*A. M.-E.*]

This genus occupies an intermediate position between the *Ocypodinæ* and the *Plagusiinæ*.

169. **Crossonotus compressipes.**

Crossonotus compressipes, A. M.-Edw., Journ. des Mus. Godeffroy, Band. i., Heft. iv., p. 83; Nouv. Arch. du Mus., t. ix., p. 283, pl. xiv., fig. 1.

Carapace with a few bosses on the gastric, cardiac, and the posterior portion of the branchial regions. Front prominent, lamellar, and divided into four rounded teeth, the median scarcely passing beyond the lateral. Lateral borders perfectly continuous with the posterior border; these borders are armed with 10 to 12 teeth on each side, and 6 to 8 behind. Internal orbital lobe very large, divided into three rounded teeth; inferior orbital border denticulated. Chelipedes of the female very slender; those of the male unequal, the larger one with the arm and wrist narrow; hand very high and smooth, ornamented internally near the fingers with long hairs; fingers short and thick. Ambulatory limbs large; merus denticulated on the borders and granular externally; dactylus broad, short, and compressed, with two sharp teeth below, and bordered above with hairs. [*A. M.-E.*]

Darnley Island, Torres Straits (Macleay Museum). Found originally in Samoa, and afterwards in New Caledonia.

Family GRAPSIDÆ.

Carapace sub-quadrate, usually deflexed, with the sides straight or arcuate. Eyes shorter than one-third the width of the carapace. Internal antennæ transversely plicate. Fourth joint of the external maxillipedes articulated with the third joint at its summit, or at its antero-external angle. Second joint of the abdomen of the male nearly equalling in width the adjoining part of the sternum.

Sub-Family Grapsinæ.

Internal antennæ concealed by the front. Third joint of the external maxillipedes not crossed by an oblique piliferous crest (body usually depressed). [*D.*]

Genus GRAPSUS, Lam.

Carapace very much flattened, more or less transversely lineolate, with the sides arcuate, the front less than half the breadth of the body. External maxillipedes having between them, when closed, a lozenge-shaped vacant space. Ambulatory legs with the tarsi spinulous below.

170. Grapsus variegatus. A.M.

Cancer variegatus, Fabr., Ent. Syst., t. ii., p. 450 (1793).

Grapsus variegatus, Latr., Hist. Nat. Crust.; M.-Edw., Hist. Nat. Crust., ii., p. 87 (1837); Miers, Cat. Crust. N.Z., p. 36 (1876).

Grapsus personatus, Lam., Hist. Ani. s. v., v., p. 249 (1818).

Grapsus strigilatus, White, Zool. Misc., p. 78 (1812); Dieffenb. New Zealand, ii., p. 265 (1843).

Leptograpsus variegatus, M.-Edw., Ann. Sci. Nat., xx., p. 171 (1853).

Carapace flat, with the branchial regions marked with oblique transverse lines. Lateral margins armed with three teeth. Front nearly horizontal, rather concave, and not occupying half the length of the carapace. Epistome very short, with transverse crests. Hands very robust, smooth externally, with a few small scattered tubercles above. Colour red, alternating with yellow.

Australian coast generally. Found also in New Zealand, at Norfolk Island, and on the coast of Chilé.

171. Grapsus strigosus. A.M.

Cancer strigosus, Herb., pl. xlvii., fig. 7.

Grapsus strigosus, Latr., Hist. Nat. des Crust., t. vi., p. 70.

Grapsus albo-lineatus, Lam., Hist. des anim. sans vert., t. v., p. 249.

Carapace much flattened; branchial regions marked with oblique transverse lines; proto-gastric lobes ornamented with sub-cristiform tubercles; front greatly inclined, not nearly so broad as half the length the carapace. Lateral borders sharp and strongly curved, armed with two teeth. Epistome very short, and presenting on each side a small transverse crest.

172. Grapsus Peroni.

Grapsus Peroni, M.-Edw., Ann. Sci. Nat. (3e série), t. xx., p. 169.

Closely allied to *G. strigosus*, but having the proto-gastric lobes little elevated, ornamented with rounded tubercles, the front less inclined. Marginal teeth of the meropodites short. [*M.-E.*]

Australia.

173. Grapsus pelagicus.

Grapsus pelagicus, M.-Edw., l. c., p. 169.

Carapace less broad than in the preceding species. Proto-gastric lobes rather prominent and strongly tuberculated, frontal region little inclined. Posterior meropodites having only a single sub-terminal little-developed tooth below. [*M.-E.*]

Torres Straits.

174. Grapsus Grayi.

Grapsus Grayi, M.-Edw., l. c., p. 170.

Nearly allied to *G. lividus*, but having the carapace more convex, the proto-gastric lobules less prominent, and the dactylopodites slender. [*M.-E.*]

Australia.

175. Grapsus Verreauxii.

Leptograpsus Verreauxii, M.-Edw., Ann. Sci. Nat., t. 20, p. 170.

Carapace not so broad as in *G. variegatus*. Lateral teeth feebler than in *L. maculatus*; cardiac region not depressed as in the latter. Carapace finely dotted with violet red. [*M.-E.*]

Australia.

176. Grapsus inornatus.

Grapsus inornatus, Hess, l. c., p. 148, pl. vi., fig. 11.

Cephalothorax almost smooth, granular anteriorly. Lateral borders arched anteriorly, armed with four teeth, of which the two last are obsolescent. Front inclined and rather broad, the four lobes scarcely distinguishable, the lateral lobes small.

Dactyli long, somewhat curved, acute, and covered, together with the under side of the propoda, with short hairs. Carpus with a small toothed process on the inner border. Hand and fingers smooth, very small, the latter without teeth. [*Hess.*]

Sydney (Göttingen Museum).

Genus Goniograpsus, Dana.

Carapace crossed transversely by numerous raised lines, subquadrate, sides straight, often convergent backwards. Front longer than half the breadth of the carapace. Antennæ usually exserted from beneath the front. External maxillipedes with a lozenge-shaped space. Tarsi armed with spinules. [*D.*]

177. Goniograpsus Thukujar. **A.M.**

Grapsus Thukujar, Owen, Crust. of the Blossom.

Pachygrapsus parallelus, Randall, Proc. Acad. Nat. Sci. Philad.

Goniograpsus Thukujar, Dana, U.S. Explor. Exped., Crust., i., p. 344.

Surface nearly smooth. Front bending downwards rather abruptly, and becoming nearly vertical. Sides converging somewhat backwards. Antero-lateral margins entire. Third joint of the posterior legs with three small teeth at the lower apex. Hand and carpus slightly rugate above, but the outer surface of the hand smooth, with a single raised line near its lower side.

Port Denison, etc.; common on the tropical parts of the coast. Found previously at the Sandwich Islands, Fijis, Samoa.

Genus Planes, Leach.

Carapace longer than broad, nearly quadrate, front straight, sides very slightly curved. External maxillipedes having between them a vacant space when closed, the third joint somewhat cordate in shape. Legs short and smooth, tarsi armed with spines.

178. Planes minutus.

Cancer minutus, Linn. Syst. Nat. (ed. xii.), p. 1048 (1766).

Nautilograpsus minutus, M.-Edw., Hist. Nat. Crust., ii., p. 90 (1837).

Planes minutus, List. Crust. Brit. Mus., p. 42 (1847); Dana, U.S. Explor. Exped., Crust., i., p. 346 (1852); Miers, Cat. Crust. N.Z., p. 39 (1876).

Carapace smooth and glabrous, a small tooth, which is sometimes obliterated, behind the external orbital angle. Anterior legs stout, smooth; wrist with a small tubercles on its inner side. Ambulatory legs broad, compressed, and thickly dilated above.

An almost cosmopolitan species.

Genus HETEROGRAPSUS, Lucas.

Carapace slightly convex and lobate in front, sides slightly arcuate anteriorly, toothed. Front straight or slightly sinuous. External maxillipedes when closed meeting or nearly meeting along their inner margins. Tarsi not spinulous.

179. Heterograpsus sexdentatus.

Cyclograpsus sexdentatus, M.-Edw., Hist. Nat. Crust., ii., p. 79 (1837); White, Dieffenb. New Zealand, ii., p. 266 (1843).

Hemigrapsus sexdentatus, Dana, U.S. Explor. Exped., Crust., i., p. 348, pl. xxii., fig. 2 (1852).

Heterograpsus sexdentatus, M.-Edw., Ann. Sci. Nat., xx., p. 192 (1853); Miers, Cat. Crust. N.Z., p. 37 (1876).

Gastric region uneven. Front straight. Lateral margins of the carapace granulous, and divided on each side into three teeth, of which the two first are very broad. Orbits directed forwards. External orbital hiatus slightly defined. Legs slender, tarsi thick and short.

Coasts of New South Wales? and Victoria? Found also in New Zealand.

180. Heterograpsus pallipes.

Heterograpsus pallipes, M.-Edw., Ann. des Sci. Nat. 3e série, t. xx., p. 194 (1853).

Pseudograpsus pallipes, M.-Edw., Hist. Nat. Crust., ii., p. 82 (1837).

Carapace almost square, a little embossed in front; front feebly bilobed. Four longitudinal crests on the external and superior surface of the hands; fingers canaliculated. Legs

almost unarmed, and ornamented with crests on the carpopodite and propodite. [*M.-E.*]

Australia (Milne-Edwards).

181. **Heterograpsus octodentatus.** A.M.

Cyclograpsus octodentatus, M.-Edw., Hist. Nat. Crust., t. ii., p. 80.

Lateral borders of the carapace armed with four teeth, of which the two last are very small. An oblique linear groove on the hepatic and branchial regions. Orbits rather widely open below, but not continued by a lateral groove. No crest on the third joint of the external maxillipedes. Tarsi slightly spinous. [*M.-Edw.*]

King Island (Paris Mus.); Port Philip; N. Coast of Tasmania (Australian Museum).

182. **Heterograpsus maculatus.** A.M.

Heterograpsus maculatus, M.-Edw., Ann. Sci. Nat. (3me série), t. xx., p. 193 (1853); Miers, Cat. Crust. N.Z., p. 39 (1876).

Very near the American *H. marmoratus*, but with the gastric region more convex, and the epi-branchial lobes separated from the meso-branchial by a transverse line curved very distinctly in the shape of an S, and formed of a series of small pits. Colour reddish. Arm with circular spots extending to the fingers. [*M.-E.*]

Found also in New Zealand (and Polynesia?).

Genus Utica, White.

Carapace somewhat eight-angled, tabular, the latero-anterior margin with three teeth; the latero-posterior part of the carapace oblique; carapace behind very straight; behind the middle there is a very strong transverse ridge. Outer jaw-feet with the third joint on the outside straight, not dilated. Fore-legs small; hind-legs very long; tarsus not particularly dilated, somewhat elongated. [*White.*]

183. **Utica setosipes.** Plate ii., fig. 2. A.M.

Utica setosipes, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Surface of the carapace and ambulatory limbs covered with a very fine short pubescence. Front not very prominent, straight.

Transverse ridge on the proto-gastric region well-marked, divided by a narrow mesial furrow. Lateral borders very little arched anteriorly. Anterior legs (in the female) small; hand smooth, with a low narrow ridge close to its lower border extending to the tip of the lower finger; fingers slightly spoon-excavate at the tips. Last two joints of the ambulatory legs fringed below with long hairs. Length of carapace $\frac{7}{16}$ inch; breadth $\frac{1}{2}$ inch. Colour dark brown.

Port Denison. Found on the sea-shore; the species of the genus hitherto described are inhabitants of fresh water.

This species is allied to *U. glabra*, A. Milne-Edwards, but differs from it in having the front less prominent, and in the hairiness of the terminal joints of the ambulatory legs.

184. **Utica crassimana.** Plate ii., fig. 3. A.M.

Utica crassimana, Haswell, l. c.

Upper surface of carapace smooth, naked. Margin of front slightly concave. Lateral borders a little more arched than in the preceding species. Anterior legs very large in the male; hand swollen, smooth; fingers very widely gaping, the gap being covered over by a thick bundle of hairs arising from the bases of the fingers and the extremity of the palm; a narrow ridge on the outer surface of the lower finger not continued on the palm; inner borders of fingers finely toothed, apices slightly spoon-excavate. Ambulatory legs finely tomentose, terminal and penultimate joints fringed below with long hairs. Colour light pink with purple markings. Length $\frac{1}{2}$ inch; breadth $\frac{5}{8}$ inch.

Holborn Island, near Port Denison, on the sea-shore.

A near ally of *U. barbimana*, A. M.-Edw., but differing from it in the relatively broader carapace, the larger hands, the more arched fingers, hairy terminal joints of the ambulatory legs, and other points.

Genus Varuna, M.-Edw.

Carapace flattened, with the sides three-toothed, somewhat arcuate anteriorly, straight and oblique posteriorly. Front with the anterior margin straight. External maxillipedes with a lozenge-shaped vacant space when closed, the third joint produced at the antero-external angle, the palpus broad. Ambulatory

legs compressed, expanded, and ciliated. Abdomen in both sexes seven-jointed. [*M.*]

185. **Varuna litterata.** A.M.

Cancer litteratus, Fabr., Suppl., p. 342 (1798); Herbst, Krabben und Krebse, iii., p. 58, pl. xlviii., fig. 4 (1799).

Trichopus litteratus, De Haan, Fauna Jap., Crust., p. 32 (1835).

Varuna litterata, M.-Edw., Hist. Nat. des Crust., ii., p. 95 (1837); Miers, Cat. Crust. N.Z., p. 40 (1876).

Carapace slightly punctate above, and marked in the middle with an H, formed by the grooves which separate the branchial and cardiac regions, etc. Lateral margins thin, and armed with three very wide teeth. A granulous line upon each branchial region, extending from the base of the last tooth to the point of insertion of the last leg at some distance from the lateral margin, which is also sharp and granulous. Front margin of the arms with strong rounded teeth, hands slightly compressed, fingers curved downwards and a little inward; ambulatory legs large, flattened and ciliate on the margins. *(M.-E.)*

A widely distributed species, found also in New Zealand, the Philippines, Japan, the Indian Ocean, etc.

Sub-Family Sesarminæ

Internal antennæ concealed by the front. Third joint of the external maxillipedes crossed by an oblique, usually piliferous crest. (Body usually thick and convex). [*D.*]

Genus Cyclograpsus, M.-Edw.

Carapace flat above, curving slightly downward anteriorly. Front straight. Antero-lateral margins thin, entire. Eyes short. Third joint of the external maxillipedes with the anterior margin truncate or slightly emarginate. Abdomen of the male scarcely narrower at base than the adjacent part of the sternum. Entirely smooth, without spines and tubercles or hairs, except on the tarsi of the ambulatory legs. [*M.*]

186. **Cyclograpsus lavauxi.** A.M.

Cyclograpsus audouinii, Dana, U.S. Explor. Exped., Crust. i., p. 359, pl. xxiii. fig. 2 (1852) nec Edwards.

Cyclograpsus Lavauxi, M.-Edw., Ann, Sci. Nat., 3me série, xx., p. 187 (1853); Miers, Cat. Crust. N.Z., p. 41, (1876).

Cyclograpsus whitei, M.-Edw., Ann. Sci. Nat., xx., p. 187 (1853).

Cyclograpsus lævis, Hess, Archiv. für Naturg., Band xxxi., p. 152 (1865).

Very near *C. Audouinii*, but with the tarsi longer and more slender. Carapace and legs nearly smooth, with marbled spots. [*M.-E.*]

Port Jackson.

187. **Cyclograpsus punctatus.**

Cyclograpsus punctatus, M.-Edw., Hist. Nat. des Crust., ii., p. 78.

This species differs from the preceding in having the hepatic and frontal regions closely punctated. The character derived by Milne-Edwards from the shape of the penultimate segment of the male is not constant—some specimens having the lateral borders regularly arched, others having them angulated. The trenchant borders of the fingers are nearly straight, whereas in the species here referred to *C. lavauxi*, there is a tolerably wide space between them at their base when closed.

N. coast of Tasmania.

188. **Cyclograpsus granulosus.**

Cyclograpsus granulosus, M.-Edw., Ann. Sci. Nat. (3e série), t. xviii., p. 197.

Nearly allied to *C. Audouinii*, but having the hands and the ambulatory legs strongly granulated, and the carapace more convex. [*M.-E.*]

Tasmania.

Genus Paragrapsus, M.-Edw.

External maxillipedes gaping, and with the merus joint nearly as broad as long, and longer than the ischium. Lateral borders of the carapace lobulated or armed with teeth. Orbits and submarginal grooves as in *Cyclograpsus*. Seventh segment of the abdomen of the female short, transverse, and not received into an excavation in the preceding joint. Legs as in *Cyclograpsus*. [*M.-E.*].

This genus is scarcely distinct from *Chasmagnathus*.

189. **Paragrapsus quadridentatus.** Plate iii., fig. 1. A.M.

Paragrapsus quadridentatus, M.-Edw., Ann. Sci. Nat. (3me sér.), t. xx., p. 195 (1853).

Carapace scarcely convex; front prominent and nearly straight; two marginal teeth including the external orbital angle; epi-gastric lobes scarcely indicated; meta-branchial crest very slight. Hands of the female having a very prominent crest on their external surface, which extends from the mobile finger to the extremity of the lower finger; hands of the male smooth and swollen. Carapace marked with scattered reddish spots. [*M.-E.*]

Australia (Milne-Edwards); Tasmania (north coast).

190. **Paragrapsus Verreauxi.**

Paragrapsus Verreauxi, M-Edw., l. c., p. 195.

Carapace feebly convex and unequal; epi-gastric lobes very prominent, especially in the male; meta-branchial lobes strongly marked. Front divided into two lobes by a broad median excavation. Three marginal teeth. Crest of the external surface of the hands of the female less strong than in *P. quadridentatus*. Carapace violet in front, and marked with large yellow spots behind. [*M.-E.*]

Australia (Milne-Edwards).

191. **Paragrapsus Gaimardi.** Plate ii., fig. 4. A.M.

Cyclograpsus Gaimardi, M.-Edw., Hist. Nat. Crust., t. ii., p. 79 (1837).

Paragrapsus Gaimardi, M.-Edw., Ann. Sci. Nat. (3me sér.), t. xx., p. 196 (1853).

Carapace much more convex than in the preceding species; front more prominent and nearly straight; epi-gastric lobes little marked. Three marginal teeth. Dactylopodites more slender and more elongated than usual. Carapace and legs spotted with red. [*M.-E.*]

Australia (M.-Edw.); Port Philip; N. Coast of Tasmania.

This species is perhaps better referred to *Chasmagnathus*; the merus of the external maxillipedes is slightly oblong.

Genus CHASMAGNATHUS, De Haan.

Carapace very thick, convex, sub-quadrate, with the sides toothed, very slightly arcuate anteriorly, and the front curving regularly downward. External maxillipedes having a wide lozenge-shaped space when closed, the third joint truncate or slightly excavate above. Eyes very stout. Anterior legs slightly compressed.

192. Chasmagnathus subquadratus.

Chasmagnathus subquadratus, Dana, U.S. Explor. Exped., Crust. i., p. 363. pl. xiii., fig. 5 (1852).

Carapace convex, smooth, somewhat punctate posteriorly; front and antero-lateral margins as in *C. lævis*. Antero-lateral margins with two incisions, sides but slightly arcuate, premedial areolet hardly distinct before or elsewhere. Posterior part of outer maxillipeds and adjoining part of sternum very short hirsute. Feet nearly as in *C. lævis*. Hand not granulate, minute punctate. Pterygostomian region very short reticulate. Fifth joint of second feet tomentose above and on anterior surface, but not below. Abdomen broader than usual at base and longer ciliate, sides excavate. [*Dana.*]

New South Wales? (Dana).

193. Chasmagnathus lævis. A.M.

Chasmagnathus lævis, Dana, U.S. Explor. Exped., Crust., i., p. 367, pl. xxiii., fig. 7.

Carapace convex, smooth, hardly granulous, somewhat areolate, front and antero-lateral margin as in the *granulatus*, but the front not having a point near the margin at the middle; premedial areolet abrupt anteriorly. Epistome in no part more prominent than the front. Anterior feet of male equal, hand slightly granulate, not thin above. Posterior feet narrower than in *granulatus*, fifth joint of second pair tomentose above and below and on the anterior side. Sides of abdomen nearly straight, obsoletely excavate. [*D.*]

Sydney; Port Molle. (W. A. H.)

194. Chasmagnathus convexus. A.M.

Chasmagnathus convexus, Haswell, l. c.

Carapace strongly convex both in the transverse and the antero-posterior direction; surface very minutely granular, lateral border arched anteriorly, with one tolerably deep incision. Front strongly deflexed, its anterior border with a slight angular mesial incision and a lateral shallow concavity, so as to appear very obscurely four-lobed. Anterior legs (in the female) very finely granulate; fingers regularly toothed, a slight space between them at the base. Length ¾ inch; breadth 1 inch.

Shoalhaven.

Genus HELICE, De Haan.

Distinguished from *Chasmagnathus* by having the sides straighter, the front relatively narrower, the eye peduncles longer, and the male abdomen narrower.

195. Helice crassa.

Helice crassa, Dana, U.S. Explor. Exped., Crust., p. 367, pl. xxiii., fig. 8 (1852); Miers, Cat. Crust. N.Z., p. 43 (1876).

Carapace sub-quadrate, lateral margin with two emarginations anteriorly, front half as long as breadth of carapace. Hand short and broad (or high), above sub-carinate; externally nearly smooth, minutely granulate. Third joint of the following feet sub-acute above. Pterygostomian region granulate, then pubescent. Length ⅝ in.; breadth ¾ in.

Illawarra (Dana). Found also in New Zealand.

196. Helice Leachii.

Helice Leachii, Hess, Archiv für Naturg., Band xxxi., p. 153 (1865).

Lateral border somewhat more arched than in the preceding species. Surface of the hand finely punctate, the last abdominal segment of the male almost triangular, the preceding segment long trapeziform. [*Hess.*]

Sydney (Göttingen Museum).

Genus SESARMA, Say.

Carapace quadrate, often transversely lineolate, the lateral margins toothed or entire. Front abruptly vertically deflexed,

usually more than half the breadth of the carapace, and divided above into several lobes by longitudinal grooves in the front part of the carapace. Pterygostomian regions reticulated. External maxillipedes with the third joint longer than broad, more or less rounded at the summit. Ambulatory legs ciliate, with the tarsi unarmed.

197. **Sesarma rotundata.**

Sesarma rotundata, Hess, Archiv für Nat., xxxi., p. 149, pl. vi., fig. 9.

Carapace strongly granulate in front, more finely granulate behind. Hepatic region dilated, branchial regions sloping off obliquely. Front border curved, and armed with three teeth, of which the last is smaller than the others. Front vertical; of its four lobes those lying nearest the orbits are very small. Legs as in *S. atrorubens*, but with the terminal joints more closely covered with hair. Carpus with a four-cornered process on its inner side. Hand thickly beset with tubercles; fingers strongly toothed on the outer border, with three large teeth on the inner. [*Hess.*]

Sydney (Hess).

198. **Sesarma atrorubens.**

Sesarma atrorubens, Hess, l. c., p. 149, pl. vi., fig. 12.

Carapace almost quadrate, the sides nearly straight, armed with three teeth, of which the last is very small. Front directed perpendicularly downwards and almost over-reached by four strongly-marked lobes. Ischia granulated and rather long; the rest of the joints of the legs ornamented with fasciculi of hairs, especially well-developed on the upper and lower borders; dactyli straight and sharp. Carpus large tuberculated, hand covered with large tubercles. Fingers strongly toothed on the inner border; on the mobile finger three, and on the immobile finger two larger teeth; outer border of the latter smooth; that of the former ribbed. Colour dark violet. [*Hess.*]

Sydney (Hess).

199. **Sesarma similis.**

Sesarma similis, Hess, l. c., p. 150.

Carapace as in *S. atrorubens*. Front also divided into four lobes; the lobes not so prominent as in *S. atrorubens*. Legs as in the preceding species, only with the ischia broader and shorter. Chelipedes of the female very small. Hands not beset with tubercles. Each finger with three larger teeth. Colour dark red. [*Hess.*]

Sydney (Hess).

Probably, as suggested by Hess, the female of the preceding.

200. **Sesarma Schütteii.**

Sesarma Schütteii, Hess, l. c., p. 150, pl. vi., fig. 11.

Carapace sub-quadrate, lateral borders almost straight, a little curved anteriorly, with three teeth, of which the two behind the orbital tooth are very small. Front inclined downwards, with four lobes, of which the lateral are smaller and scarcely distinguishable from the larger middle ones. Legs long and thin, chelipedes bent. Carpus strongly granulate, and with a larger tubercle in the middle of the outer surface; fingers equally toothed on their outer side; mobile finger strongly arched, armed with three larger teeth. Colour dark brown; legs lighter. [*Hess.*]

Sydney. (Hess.)

201. **Sesarma erythrodactyla.**

Sesarma erythrodactyla, Hess, l. c., p. 151, pl. vi., fig. 10.

Carapace sub-quadrate, sides without teeth, arching downwards immediately behind the orbital tooth. Front provided with four lobes, distinctly separated from one another, but not very prominent. Legs flattened, ischium strongly tuberculated, the rest of the joints ornamented with hairs chiefly on the lateral border. Carpus granulated. Outer border of the mobile finger ribbed. Inner border of both fingers with two larger teeth, between which are several smaller ones. Colour yellowish. [*Hess.*]

Sydney (Hess).

*Sub-Family Plagusiinæ.**

Internal antennæ exposed, and each visible from above in a longitudinal sinus of the front. Third joint of the external

* Vide E. J. Miers, *Revision of the Plagusiinæ*, Ann. and Mag. Nat. Hist., Feby., 1878, pp. 147-154.

maxillipedes small and not crossed by an oblique piliferous crest. (Body very much depressed.) [*D.*]

Genus Plagusia, Latr.

Carapace wide and very much depressed, with the lateral margins toothed. Third joint of the external maxillipedes scarcely narrower than the second at the summit, rarely longer than broad. Anterior legs in the male with the hand robust, longitudinally costate, scarcely compressed. [*M.*]

202. Plagusia tuberculata.

Plagusia squamosa, Lam., Hist. An. sans Vert., tome v., p. 246 (1818); M.-Edw., Hist. Nat. Crust., ii., p. 94 (1837), nec Herbst.

Plagusia tuberculata, Lam., l. c., p. 247; Latr., Encycl., x., p. 146 (1825); M.-Edw., Hist. Nat. Crust., ii., p. 94 (1837); Miers, Ann. and Mag. Nat. Hist., 1878, p. 148.

Plagusia orientalis, Stimpson, Proc. Acad. Nat. Sci. Philad. (1858), p. 103.

Carapace covered with numerous small, often depressed tubercles, each of which is bordered by a fringe of short, stiff hairs. Lobe above bases of second and third ambulatory legs prominent, sub-acute, and not dentated. Terminal segment of abdomen of male broadly semi-oval and rounded at its distal extremity. [*M.*]

Port Jackson. Commonly distributed in the Indo-Pacific region.

203. Plagusia immaculata.

Plagusia immaculata, Lam., Hist. Nat. Anim. sans Vert., v., p. 247 (1818); Miers, l. c., p. 150.

Plagusia depressa, Latr., Encycl., x., p. 145 (1825); M.-Edw. Hist. Nat. Crust., ii., p. 93 (1837); Ann. des Sciences Nat. (sér. 3), Zool. xx., p. 179 (1853); Dana, U.S. Explor. Exped., Crust., i., p. 369 (1852); Stimpson, Proc. Acad. Nat. Sci. Phil., p. 103 (1858); nec *Cancer depressus*, Fabr.

Carapace more convex than in the preceding; tubercles much depressed, quite naked, often almost obsolete upon the gastric

and cardiac regions. Lobe above the bases of the second and third ambulatory legs small, not dentated. [*M.*]

Torres Straits. A widely distributed species.

204. Plagusia glabra.

Plagusia glabra, Dana, Proc. Acad. Nat. Sci. Philad., p. 252 (1851); U.S. Explor. Exped., xiii., Crust., i., p. 371, pl. xxiii., fig. 10 (1852); M.-Edw., Ann. Sci. Nat. (3me sér.), xx., p. 179 (1853); Miers, l. c., p. 151.

Carapace smooth and glabrous, antero-lateral margin quadridentate; front above obliquely sub-cristate, not spinigerous. Anterior legs of male very short, part of hand preceding fingers shorter than its height, granulate above, smooth externally, and not costate; wrist nearly smooth. Third joint of eight posterior legs smooth. Third joint of outer maxillipedes quadrate, slightly oblong. [*M.*]

New South Wales; Moreton Bay.

205. Plagusia chabrus. A.M.

Cancer chabrus, Linn.; Syst. Nat., p. 1044 (1766).

Plagusia tomentosa, M.-Edw., Hist. Nat. Crust., ii., p. 92 (1837); Ann. Sci. Nat. (3e sér.), xx., p. 178 (1853).

Plagusia capensis, De Haan, Fauna Japon., Crust., p. 58 (1835).

Plagusia chabrus, White, Ann. and Mag. Nat. Hist., xvii., p. 497 (1846); Miers, l. c., p. 152.

Carapace covered with a very short close pubescence and without tubercles. Front armed above with two small spines, and with a series of small tubercles on its anterior margin. Anterior legs tuberculated. Ambulatory legs with a series of spines on the upper margin of the merus joint; lobes above the bases of the second and third ambulatory legs terminating in a short spine. [*M.*]

New South Wales; Tasmania. Found also at the Cape of Good Hope, in New Zealand, and on the coast of Chilé.

Genus Leiolophus.

Outer maxillipedes with the merus joint very small and much narrower than the preceding joint. (Carapace with smooth

naked ridges on its upper surface, but without numerous tubercles. Merus joints of the ambulatory legs with a series of spines on their upper margins. Male genital appendages of the first pair not twisted, with a terminal claw.) [*M.*]

206. **Leiolophus planissimus.**

Cancer planissimus, Herbst, Krabben u. Krebse, iii., pl. lix., fig. 3 (1804).

Plagusia serripes, Lam., Hist. An. sans Vert., p. 247 (1818).

Plagusia clavimana, Desm., Consid. Crust., p. 127, pl. xiv. fig 2 (1825); M.-Edw., Hist. Nat. Crust., ii., p. 92 (1837); Atlas in Cuv. R. A., pl xxiii., fig. 3.

Acanthopus planissimus, De Haan, Faun. Japon., Crust., p. 30 (1835); Dana, U.S. Explor. Exped. xiii., Crust., ii., p. 372 (1852); M.-Edw., Ann. Sci. Nat. (sér. 3), Zool. xx.; p. 180 (1853).

Acanthopus Gibbesi, M.-Edw., Ann. Sci. Nat., t. c., p. 180 (1853).

Leiolophus planissimus, Miers, Cat. Crust., N.Z., p. 46 (1876); Ann. and Mag. Nat. Hist., 1878, p. 153.

Hands in the male strong; the palms compressed and considerably dilated, much broader than the wrist, not sulcated on their upper margins. Greatest width of the abdomen of the male exceeding its length to the base of the last segment. [*M.*]

Torres Straits. Widely districuted in tropical seas.

Family III. PINNOTHERIDÆ.

Carapace obese or depressed, rounded on the sides, of soft consistency. Eyes very short, imbedded in the orbits. Buccal organs very variable. Margin of the efferent branchial channel partly defined by a ridge on the palate. Abdomen of the male narrow, toward the base much narrower than the adjacent part of the sternum. Legs usually small, weak. [*D.*]

Sub-Family Pinnotherinæ.

Usually obese, sometimes depressed. Second joint of the external maxillipedes small or obsolete. [*D.*]

Genus PINNIXA, White.

Body very obese, much broader than long; surface perfectly smooth. Front not united with the epistome. Fossæ of the internal antennæ often coalescent. Eyes very small, placed near to one another. Second joints of the external maxillipedes small or obsolete.

207. **Pinnixa faba.**

Pinnothera faba, Dana, U.S. Explor. Exped., Crust., i., p. 381, pl. xxiv., fig. 4.

Carapace and outer maxillipedes naked; outer maxillipedes almost longitudinal. Anterior feet of female short, hand rounded above, fingers minutely pubescent. Posterior feet quite short and stout, third joint of fourth pair one-third as long as breadth of carapace, tarsus short, sub-conical from a stout base, uncinate at apex. [*Dana.*]

A specimen found in *Haliotis coco-radiata*, at Port Denison, differs from that described and figured by Dana only in having the legs completely smooth.

Genus XANTHASIA, White.

Distinguished from *Pinnotheres* by having the carapace surrounded by a narrow elevated border.

208. **Xanthasia murigera.**

Xanthasia murigera, White, Ann. and Mag. Nat. Hist., Vol. xviii., p. 177, pl. ii., fig. 3 (1846); Dana, Op. cit., i., p. 384, pl. xxiv., fig. 6; A. M.-Edw., Nouv. Arch. du Mus., t. ix., p. 321.

Carapace parchment-like, surrounded by a thin, raised and prominent border, which is much higher at the sides than in front; upper surface of the carapace, internal to this, excavated, except in the middle where there is a much developed circular and slightly pedunculated projection; gastric region with a few rugosities. Front deflexed and rounded, Eyes small and immobile. Legs short and terminated by a very sharp hooked nail.

Cape Grenville (Macleay Museum). This curious species inhabits the shell of species of *Tridacna*.

Sub-Family Hymenicinæ.

Body very much depressed, sub-orbicular, or sub-triangular, slightly produced, often rostrate, anteriorly. Second joint of the external maxillipedes more than half the length of the third joint. [*D.*]

Genus HYMENOSOMA, Leach.

Carapace depressed, usually sub-circular in outline, flat above.

The sub-division of this sub-family into the genera *Hymenosoma*, *Hymenicus*, and *Halicarcinus*, appears to be unnecessary, and based on extremely slight points of distinction, and I have therefore placed all the species under Leach's original genus.

209. **Hymenosoma planatum.** A.M.

Cancer planatus, Fabr., Ent. Syst., ii., p. 446 (1793).

Leucosia planata, Fabr., Ent. Syst., Suppl., p. 350 (1798).

Hymenosoma Leachii, Guérin, Icon., pl. x., fig. 2, Voy. Coquille ii., p. 22 (1828).

?Hymenosoma tridentatum, Jacq. and Luc., Voy. Pole Sud., Zool., iii., p. 60, pl. v., fig. 27 (1853).

Halicarcinus planatus, White, Ann. Mag. Nat. Hist., xviii., p. 178, pl. ii., fig. 1 (1846).

Halicarcinus ovatus, Stimpson, Proc. Acad. Nat. Sci. Philad., p. 109 (1858).

Carapace quite flat above, with a transverse groove separating the gastric from the cardiac regions, and a longitudinal groove on each side of these regions. Antero-lateral margins with two small acute teeth. Anterior legs of the male very much enlarged, hand smooth and swollen, fingers straight, with a space between them when closed. Length ½ in.; breadth ⅝ in.

Port Jackson; Port Western.

The *Elamene Mathæi* of Milne-Edwards (Ann. Sci. Nat. (3 sér.) xx., p. 223, pl. xi., fig. 4, and Hist. Nat. Crust., ii., p. 35) is probably the young male of this species. It is quite distinct from the *Hymenosoma Mathæi* of Desmarest (Consid., p. 163), which is described as having the form of an equilateral triangle, with the anterior angle (rostrum) a little rounded. As to which

of these two species may be Rüppell's *Hymenosoma Mathæi*, I am unable to form an opinion—the "Krabben des Rothen Meeres" not being here obtainable.

210 **Hymenosoma australe.** Plate iii., fig. 2. A.M.

Hymenosoma australe, Haswell, l. c.

Carapace sub-orbiculate, the length (exclusive of the rostrum) a little less than the greatest breadth. Rostrum prominent, deflexed, its upper surface concave from side to side, bordered laterally by a raised ridge, which terminates near the extremity in a slight enlargment; extremity in the form of an obtuse angle. Lateral borders of the carapace with two obscure teeth. Chelipedes of the male extremely large; propodos dilated, smooth, rather sharp-edged below; fingers gaping at the base, with a projecting pulvinus. Chelipedes of female small; hand not dilated; fingers straight. Length ½ in.

Williamstown, Port Philip.

211. **Hymenosoma varium.** A.M.

Hymenicus varius, Dana, U. S. Explor. Exped., Crust., i., p. 387, pl. xxiv., fig. 9 (1852); Miers, Cat. Crust. N.Z., p. 50 (1876).

Carapace smooth; naked, flat, nearly orbiculate, or ovato-orbiculate, very slightly wider than long, front projecting and trilobate. Antero-lateral margin with two obsolescent teeth. Abdomen of male narrow oblong, sub-triangular, first segment broadest and triangulate on either side, penultimate narrower than preceding, last oblong sub-triangular, rounded at apex. Anterior feet of moderate size, eight following very slender, nearly or quite naked. Colour various, greenish black, mottled, or dirty white or greyish. Length 2 to 3 lines. [*Dana.*]

Port Stephens; Port Jackson; Port Western; Tasmania (north coast). Also found in New Zealand.

212. **Hymenosoma Krefftii.**

Hymenicus Krefftii, Hess, Archiv für Naturg., Band xxxi., p. 141, pl. vi., fig. 5 (1865).

Carapace round, perfectly even and flat, produced anteriorly into a sharp trifid rostrum. Lateral borders sharp, smooth,

without teeth. The ocular peduncles are far over-reached by the rostrum; the legs very long, covered with sharp hooks, the fingers toothless, the abdomen three cornered. [*Hess.*]

Sydney (Göttingen Museum).

213. Hymenosoma rostratum.

Hymenosoma rostratum, Haswell, l. c.

Carapace sub-orbiculate, rather longer than broad. Rostrum produced, acute, slightly recurved; an obscure tooth at its base in front of the eye; a prominent acute tooth behind the eye, and another about the middle of the lateral margin. Three prominent tubercles on the pterygostomial regions. Chelipedes in the male very large, arm trigonal, a sharp tooth at the distal end of its upper border; carpus with three short, much elevated, tooth-like carinæ; propodos broad, compressed, prominently keeled above, obscurely keeled below; fingers each with a basal tooth; immobile finger with a second but lower elevation about the middle. Length $\frac{5}{16}$ inch; breadth $\frac{1}{4}$ inch.

Griffiths' Point, Port Western, Victoria.

Family IV. MYCTERIDÆ.

Body thick. Carapace very narrow anteriorly, scarcely rostrate, without orbits. Internal antennæ rather small, longitudinal. [*D.*]

Genus Mycteris, Latr.

Carapace nearly circular, much dilated above. External maxillipedes nearly vertical, forming a short and broad reversed cone. Anterior legs very long; ambulatory legs long, slender, and compressed. Abdomen of the same form in both sexes, enlarged towards the end.

214. Mycteris longicarpus.

Mycteris longicarpus, Latr., Encycl., pl. 297, fig. 3; Desmarest, Consid. Crust., pl. 11, fig. 2; Guérin, Icon. Crust., pl. iv., fig. 4; M.-Edw., Hist. Nat. Crust., ii., p. 37 (1837); Ann. Sci. Nat. (3 sér.) xviii., p. 154; A. M.-Edw., Nouv. Arch. du Mus., t. ix., p. 276.

Carapace nearly smooth. A spine external to the orbits. Legs very long.

Port Jackson, etc. Found also in New Caledonia.

215. **Mycteris platycheles.**

Mycteris platycheles, M.-Edw., Ann. Sci. Nat., t. xviii., p. 154.

Carapace covered with small prominent granular points; a dentated crest external to the orbits. Legs shorter than in the preceding species.

Tasmania (north coast); Port Western; Botany Bay.

Sub-Tribe Oxystomata.

Carapace varying greatly in shape, transverse, arcuate anteriorly or sub-globose. Branchiæ 7–9 in number. Antennary region very small, antennæ minute. Epistome rudimentary. Buccal cavity more or less triangular in outline, produced and narrowed anteriorly. Efferent channel passing out at the middle of the palate which is produced forwards. Male genital appendages inserted in the basal joint of the fifth pair of legs.

Family I. LEUCOSIIDÆ.

Afferent canal to the branchiæ entering at the antero-lateral angle of the palate. Genital appendages of the male exserted from the sternum. Terminal joints of the external maxillipedes concealed by the preceding. Legs gressorial.

Genus Leucosia, Fabr.

Carapace ovate-orbicular, sub-globose, smooth; front sub-produced, covering the antennulary fossæ. Orbit with three fissures. External maxillipedes having the palp parallel-sided, straight, or slightly curved, obtuse; the endopodite acutely triangular. Anterior limbs rather stout, of moderate length, arms tuberculated at the base and sides; fingers slender. Four posterior pairs of legs becoming successively shorter from the second to the fifth. Abdomen of the male in some species with all the segments united, the first and the last excepted, in others the third joined with the fourth, and the fifth with the sixth. Abdomen of the female with the third to the sixth segments united. [*B.*]

216. Leucosia unidentata.

Leucosia unidentata, De Haan, Crust. Japon., p. 133, t. xxxiii., fig. 3; Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 44.

Front uni-dentate; thoracic sinus circular in front, circumscribed by very broad tubercles; arms with two rows of tubercles on the upper surface.

Torres Straits (Brit. Museum).

217. Leucosia orbicularis.

Leucosia orbicularis, Bell, Trans. Linn. Soc., Vol. xxi., p. 284, pl. xxx., fig. 1; Haswell, l. c., p. 44.

Carapace orbicular, front broad, very short, tridentate; thoracic sinus absent; sternum in both sexes granulated in front. [*B.*]

Coasts of Australia (Brit. Museum).

218. Leucosia ocellata.

Leucosia ocellata, Bell, l. c., p. 289, pl. xxxi., fig. 1; Haswell, l. c., p. 45.

Carapace rhomboidal; front tridentate; gastric region marked with four small red spots, of which the two anterior are ocellated. [*B.*]

Eastern Australia (Brit. Museum); Keppel Bay (Macleay Museum).

219. Leucosia Whitei.

Leucosia Whitei, Bell, l. c., p. 289, pl. xxxi., fig. 2; Haswell, l. c., p. 45.

Carapace rhomboid; front produced, minutely tridentate; hepatic and branchial regions with three or four granules; arms tomentose, covered everywhere with large tubercles. [*B.*]

Princess Charlotte Bay; Cape Grenville; Brook Island (Macleay Museum).

220. Leucosia reticulata.

Leucosia reticulata, Miers, Trans. Linn. Soc., 1877, p. 237, pl. xxxviii., figs. 13–15; Haswell, l. c., p. 45.

Carapace orbicular, smooth, ornamented with reticulated green lines; front very short, entire; thoracic sinus short, not defined; hepatic region with a few red granules.

Shark's Bay (Brit. Mus.); Port Darwin (Macleay Museum).

221. **Leucosia Perryi.**

Leucosia Perryi, Miers, l. c., p. 238, pl. xxxviii., figs. 19–21; Haswell, l. c., p. 46.

Carapace sub-depressed; front tridentate; thoracic sinus absent; arms densely tuberculate at base; hand and carpus smooth.

Shark's Bay (Brit. Museum).

222. **Leucosia pubescens.**

Leucosia pubescens, Miers, l. c., p. 238, pl. xxxviii., figs. 19–21; Haswell, l. c., p. 46.

Carapace convex, smooth; hepatic regions concave, smooth; front tridentate, even above; thoracic sinus with the anterior margin smooth, not defined, pubescent; arms pubescent above.

Shark's Bay (Brit. Museum).

223. **Leucosia pulcherrima.** A.M.

Leucosia pulcherrima, Miers, l. c., p. 236, pl. xxxviii., figs. 4–5; Haswell, l. c., p. 46.

Carapace smooth, convex, sparsely punctate in front, ornamented in front with two coalescent trefoil-like, and behind with two separate circular, linear red markings; thoracic sinus deep, narrow, well-defined in front; carpus and hand smooth.

Lizard Island (Brit. Museum); Port Denison (Australian Museum).

224. **Leucosia splendida.** A.M.

Leucosia splendida, Haswell, l. c., p. 47, pl. v., fig. 1.

Carapace smooth, convex, sparsely punctate anteriorly; ornamented with two trefoil-like figures which do not coalesce at any point, and with two circular figures behind; hand with an inconspicuous row of tubercles; thoracic sinus deep, narrow, well-defined in front.

Port Jackson.

225. Leucosia Chevertii.

Leucosia Chevertii, Haswell, l. c., p. 47, pl. v., fig. 2.

Carapace rhomboidal, polished, with a rounded elevation on the hepatic region, which is free from granulations. Front nearly entire, but obscurely trilobed. Thoracic sinus, as in *L. Whitei*, deep, strongly waved above, with a granulated inferior margin. The postero-lateral margin, as in that species, fringed with a line of hair. Maxillipedes and limbs as in *L. Whitei*, except that the wrist has fewer granules. Abdomen (male) broadly triangular, with a deep median sulcus at its proximal end. Colour of the carapace very light brown, with a blush of dark brown on each hepatic region, and a lighter brown mark on the gastric and genital regions; the tubercles of the arms pink, and the fingers red at the base.

Cape Grenville; Darnley Island (Macleay Museum).

226. Leucosia Leslii.

Leucosia Leslii, Haswell, l. c., p. 48, pl. vi., fig. 1.

Carapace rhomboidal, the lateral angles projecting somewhat; surface with scattered punctations on its anterior half; hepatic region scarcely convex. Front produced, its anterior border obscurely four-lobed. Thoracic sinus rather shallow, elongated, not defined; its anterior border not tuberculated; its cavity occupied by five large tubercles. Lateral border of carapace with a row of tubercles, which are small anteriorly, large and coalescent above the insertion of the arms, stopping short a little behind that point; postero-lateral and posterior border with a row of small, close-set tubercles. Anterior limbs rather longer than the carapace; upper surface of arm with a group of small tubercles at the base, and scattered larger tubercles on the proximal half; inner surface nearly covered with close-set tubercles; outer border with a row of large tubercles; inferior surface almost smooth; inner border of hand with a row of small tubercles.

Darnley Island, Torres Straits (Macleay Museum).

227. Leucosia polita.

Leucosia polita, Hess, Archiv. für Natur., xxxi., p. 155, pl. vi., fig. 4 (1865).

Carapace similar to that of *L. rhomboidalis* of De Haan. Lateral border bulging outwards over the coxa and closely tuberculated. Front almost triangular. Legs like those of *L. rhomboidalis*. Joints of the legs yellow; ischium with a yellow band in the middle. Arm beset with numerous white tubercles above and on the sides, especially at the base; quite smooth below. Hands quadrangular, with a line of fine impressed punctations on the lower border. Mobile finger only toothed at the apex; immobile finger of the left hand with a protuberance in the middle of the inner border; immobile finger of the right hand rudimentary. [*Hess.*]

Sydney (Hess).

Genus Myra, Leach.

Carapace ovate-globose, posteriorly tridentate. Orbit with three deep fissures. Antennulary fossæ oblique. External maxillipedes with the external margin of the palp dilated. Anterior limbs very long, slender, hands straight. Abdomen of the male with the third to the sixth segments coalescent, of the female with the fourth to the sixth. [*B.*]

228. Myra carinata.

Myra carinata, Bell, l. c., p. 297, pl. xxxii., fig. 3; Haswell, l. c., p. 50.

Carapace ovate, minutely granulated, carinated, the median posterior spine three or four times longer than the lateral; lateral spines conical, acute. [*B.*]

Cape Grenville (Macleay Museum).

229. Myra mammillaris.

Myra mammillaris, Bell, l. c., p. 298, pl. xxxii., fig. 5; Haswell, l. c., p. 50.

Carapace ovate, glabrous, sparsely ornamented with small elevated tubercles, posterior teeth very short, rounded. [*B.*]

Shores of Australia (Brit. Museum).

230. ? Myra affinis.

Myra affinis, Bell, l. c., p. 296, pl. xxxii., fig. 2; Haswell, l. c., p. 50.

Carapace ovate-globose, posterior spines short; sub-equal; anterior legs scarcely twice the length of the carapace; hand a third longer than the fingers. [*B.*]

Cape Grenville (Macleay Museum).

231. Myra Australis. A.M.

Myra Australis, Haswell, l. c., p. 50, pl. v., fig. 3.

Carapace ovoid, strongly convex, granulated, with a slight keel, and provided on each hepatic region with a prominent mammiform elevation; intestinal region dilated, crowned with a cluster of granules; pterygostomial regions very acutely angulated. Median posterior spine little longer than the lateral, conical, pointed, and sharply recurved at the apex; lateral spines flattened, triangular. Front entire, slightly depressed mesially. Arm covered with large granules throughout its whole extent; wrist, hand and fingers covered with fine granulations; fingers about half the length of the hand, slightly ridged longitudinally. External maxillipedes and sternum covered with minute granulations. Abdomen of male triangular, granulated externally, smooth mesially, its borders concave throughout the greater part of their extent, a prominent tubercle on the penultimate segment. Abdomen of female granulated, broadly ovoid, with well-marked longitudinal sulci, and a tooth on the penultimate segment.

Sue, Darnley, and Palm Islands; Cape Grenville; Port Denison.

232. Myra Darnleyensis.

Myra Darnleyensis, Haswell, l. c., p. 52, pl. v., fig. 4.

Carapace granular, non-carinated, a large tubercle on each hepatic ridge. Front deeply grooved mesially, obscurely four-lobed. Posterior spines large, broad, compressed, sub-triangular, —the middle one slightly larger than the others. Maxillipedes and sternum covered with minute granulations. Fingers slightly exceeding the hand in length, striated longitudinally, meeting by the whole extent of their inner margins, which are minutely toothed. Ambulatory limbs slender. Abdomen (male) sparsely granulous, with a small tubercle on the penultimate segment. A few ill-defined light yellow marks on the carapace; two light

red bands on the upper surface of the arm; and one of the same colour on the distal surface of the hand.

Darnley Island (Macleay Museum).

233. ?Myra eudactyla.

? Myrodes eudactyla, Bell, l. c., p. 299, pl. xxxii., fig. 6.

Myrodes gigas, Haswell, l. c., p. 52, pl. v., fig. 5.

Myra eudactyla, A. M.-Edw., Nouv. Arch. du Mus., t. x., p. 46, pl- iii., fig. 3.

Carapace minutely and sparsely granulated, distinctly but slightly carinated; hepatic region with a small ridge, and a marginal tooth; cardiac region separated from the branchial on each side by a slight depression, the posterior teeth rather small, the middle one the longest and placed a little higher than the others. Rostrum distinct, bifid, the two tooth-like projections forming the covering of the antennary fossæ, which are very open. External foot-jaws with the palp evenly curved on the outer edge. Anterior legs short, the arm minutely granulated; hand swollen at the base, narrowed forwards, as broad as it is long; the fingers slender, elegantly curved, longer than the hand, armed with sharp teeth and hooked at the extremity. [*B.*]

The Australian specimens described by me as *Myrodes gigas* belong without doubt to the New Caledonian species described and figured by Dr. A. Milne-Edwards as *Myra eudactyla*, though both differ considerably from Bell's figure. Bell's specimens were obtained from the Philippines, and it is quite likely, judging from the figure in Bell's Monograph, that the New Caledonian and Australian species is distinct from it.

Genus Philyra, Leach.

Carapace orbicular, depressed, unarmed; front shorter than the epistome. Antennulary fossæ almost transverse. Orbit open above, with three fissures. Palp of external maxillipedes dilated. Eight posterior feet with a compressed tarsus. Abdomen of the male hastate lanceolate; of the female with the last joint narrow and much produced. [*B.*]

234. Philyra lævis. A.M.

Philyra lævis, Bell, l. c., p. 300, pl. xxxii., fig. 7; Haswell, l. c., p. 53.

Carapace, body, and legs completely smooth. [*B.*]

Port Adelaide; Port Philip; King George's Sound; Tasmania.

235. Philyra porcellana.

Cancer porcellanus, Fabr., Ent. Syst., t. ii., p. 441; Herbst, t. i., p. 92, pl. ii., fig. 18.

Leucosia porcellana, Fabr., Suppl. Ent. Syst., p. 350; Latr., Hist. Nat. Crust., vi., p. 117.

Philyra porcellana, Milne-Edwards, Hist. Nat. Crust., ii., p. 133; Bell, l. c., p. 300; Haswell, l. c., p. 53.

Carapace globose, minutely punctate, front scarcely shorter than the epistome; borders granulated; arms cylindrical, tuberculated; hands swollen, smooth. [*B.*]

Swan River (Brit. Museum).

Genus Phlyxia, Bell.

Carapace rhomboid, armed with three tubercles behind. Orbit emarginate above, with two fissures. Antennules elongate. External maxillipedes with the palp broad, the external border curved, narrowed in front; the endopodite with the penultimate joint parallel-sided, the last triangular. Abdomen with the third to the sixth segments coalescent in both sexes. [*B.*]

236. Phlyxia crassipes. A.M.

Phlyxia crassipes, Bell, l. c., p. 304, pl. xxxiv., fig. 2; Haswell, l. c., p. 53.

Carapace sub-carinate, rostrum quadrate, with four teeth; anterior legs more than twice as long as the carapace; arms rounded, dilated in the middle. [*B.*]

Port Jackson; Port Stephens. Very common at depths of two or three fathoms.

237. Phlyxia lambriformis. A.M.

Phlyxia lambriformis, Bell, l. c., p. 309, pl. xxxiv., fig. 1; Haswell, l. c., p. 53.

Carapace carinate, rostrum triangular, emarginate, antero-lateral margin incised, postero-lateral acutely carinated. [*B.*]

Princess Charlotte Bay; Holborn Island, near Port Denison; Port Curtis (W. A. H.)

238. **Phlyxia quadrata.**

Phlyxia quadrata, A. Milne-Edwards, Journal des Mus. Godeffroy, Band i., Heft iv., p. 86; Haswell, l. c., p. 53.

Carapace rhomboidal, elevated in the middle; hepatic regions much lower than the branchials; front produced, emarginate; the posterior margin with two tubercles; the body and limbs with very minute granules, larger at the lateral margin.

Bass' Straits (Museum Godeffroy).

239. **Phlyxia erosa.**

Phlyxia erosa, A. Milne-Edwards, l. c., p. 86; Haswell, l. c., p. 54.

Carapace elongated, contracted anteriorly, tuberculated posteriorly, almost smooth in front, cardiac region elevated, lateral margins unarmed; front produced, with two acute lobes.

Bass' Straits (Museum Godeffroy).

240. **Phlyxia orbicularis.** A.M.

Phlyxia orbicularis, Haswell, l. c., p. 54, pl. vi., fig. 2.

Carapace orbicular, moderately carinated, beset throughout with minute granules; median posterior tooth small and sharp, the lateral teeth broad, short, and triangular. Lateral borders armed with five minute teeth. Sternum granular. Anterior limbs more than twice the length of the carapace, covered with extremely minute granules; arm cylindrical; hand and fingers of about equal length; the latter stout, curved, and terminating in fine points which cross one another when closed, their inner margins finely denticulated.

This may be the *Ebalia quadridentata* of Gray *(Phlyxia quadridentata* of Stimpson), the description of which I have not seen.

241. **Phlyxia Petleyi.** Plate iii., fig. 3. A.M.

Phlyxia Petleyi, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Carapace rhomboidal, in general outline similar to that of *P. lambriformis*. Front emarginate; antero-lateral borders with three conical teeth, the first rather larger than the others, a fourth smaller tooth at the junction of the antero-lateral and postero-lateral borders; postero-lateral border with three compressed conical teeth; three prominent, sub-equal, conical teeth behind, the mesial tooth situated above the other two, the latter situated immediately above the insertion of the abdomen. Upper surface closely granulated, a broad smooth longitudinal ridge on the gastric region, followed by a row of three conical tubercles; on either side of the posterior portion of the mesial ridge, an ovoid tubercular eminence, with the long axis longitudinal; branchial region with a few small tubercles. Arm, carpus, and propodos closely granulated, the granules on the first coarser than those on the two last; dactyli finely toothed, incurved at their points. Abdomen (female) covered with flat granules, a small tooth in the middle of the distal border of the composite segment.

Port Molle (Whitsunday Passage), 14 fath. (W.A.H., H.M.S. "*Alert.*")

A second, smaller, male specimen from the same locality, differs from this mainly in having the upper surface of the carapace free from granulations.

242. Phlyxia granulosa.

Phlyxia granulosa, Haswell, l. c., p. 54, pl. vi., fig. 3.

Carapace rhomboidal, closely granulated, the posterior border armed with two triangular compressed teeth; cardiac region elevated to form a prominent pyramidal eminence surrounded by a narrow fissure, continuous with which anteriorly is a pair of similar fissures separating the genital region from the branchials. Genital region armed with a short, blunt spine; a pair of similar spines on the posterior half of the gastric region, and one on each branchial region; on each hepatic region a triangular tooth, bounded behind by a narrow fissure similar to that which surrounds the intestinal eminence. Front moderately prominent, bidentate. Sternum and external maxillipedes covered with close-set granules, which become elongated into spinules towards the anterior extremities of the latter. Limbs covered all over with similar

granules. Arm obscurely triquetrous; hand ridged above and internally; fingers acuminate, meeting when closed by the entire extent of their finely-toothed inner margins.

Dredged outside Port Jackson Heads (Macleay Museum).

243. Phlyxia Ramsayi. A.M.

Phlyxia Ramsayi, Haswell, l. c., p. 55.

Carapace nearly square, covered, together with the limbs, with close-set granules. Front with a slight median fissure, on each side of which are two rounded lobes. Gastric region with one mesial, longitudinal, and two lateral, oblique ridges, the latter of which stop short about the posterior boundary of the region, while the former becomes dilated posteriorly, and becomes merged in the prominent pointed eminence occupying the cardiac region. Hepatic regions much depressed. Epibranchial regions depressed; meso- and metabranchial slightly dilated, with two tubercular elevations—the anterior elongated and double, the posterior conical. Anterior limbs about twice as long as the carapace; hand compressed, and keeled above; fingers slightly curved, pointed, strongly ridged, and armed with rounded teeth. Ambulatory limbs about equal to the carapace in length; propodos dorsally carinate. Colour light red. Length and breadth, 3½ lines.

Port Jackson (Australian Museum).

Genus Nursia, Leach.

Carapace polygonal, front produced. Orbits directed outwards. Antennulary fossæ transverse. Palp of the external maxillipedes curved, dilated, obtuse in front and behind; endopodite with the internal margin straight, the penultimate joint quadrate, the last triangular. Anterior legs with the digits deflexed. Abdomen of the male having the penultimate segment armed near its apex with a dentiform process. [*B.*]

244. Nursia plicata. A.M.

Cancer plicatus, Herbst., Krabben, iii., t. 59, f. 2.

Nursia Hardwickii, Leach. Zool. Misc., iii., p. 20.

Nursia plicata, Bell, l. c., p. 307, pl. xxxiv., fig. 4.

Carapace with four teeth on either side, in the middle with three tubercles forming a triangle, posteriorly with an elevated transverse, tuberculated ridge; front with four teeth. [*B.*]

Port Denison.

245. Nursia sinuata.

Nursia sinuata, Miers, l. c., p. 240, pl. xxxviii., fig. 28.

Carapace convex, broader than long, cardiac region with three tubercles; posterior and postero-lateral margins deeply sinuated, armed with seven almost equal teeth; hand compressed but hardly carinated.

Moreton Bay (Brit. Museum).

Genus Nursilia, Bell.

Carapace broader than long, margin polygonal; front produced. Orbits with two fissures, directed outwards. Antennulary fossæ oblique. External maxillipedes extending beyond the epistome, the palp curved, dilated in the middle, the inner ramus elongate, its internal border arched. Anterior limbs slender, hand swollen. digits curved, dentate, longer than the hand. [*B.*]

246. Nursilia dentata.

Nursilia dentata, Bell, l. c., p. 309, pl. xxxiv., fig. 6; Haswell, l. c., p. 56.

Carapace rather broader than long, the margin laminated; a slight fissure between the hepatic and branchial regions; an obtusely triangular tooth on the margin of the former, and three slight angular projections on the latter; several small projecting teeth on the surface of the carapace, and a longitudinal carina, on the posterior half of which are three strong spines curved forwards; an elevated line on the branchial region. Digits of the anterior legs finely toothed. [*B.*]

Fitzroy Islands (Macleay Museum).

Genus Lithadia, Bell.

Carapace rhomboidal, rough, regions gibbous; rostrum bifid, deflexed. Orbits directed upwards and outwards. Antennulary fossæ oblique. External foot-jaws with the palp ensiform, obtuse anteriorly; the inner ramus lanceolate, longer than the

palp. Anterior legs robust, rough; arms tuberculated, their outer margin carinated; hands carinated; fingers approximated. Abdomen of the male with the third, fourth, and fifth segments coalescent. [*B.*]

247. **Lithadia (?) sculpta.**

Lithadia (?) sculpta, Haswell, l. c., p. 57. pl. vi., fig. 5.

Carapace broader than long, deeply sulcated. Sulci consisting of a circumferential sulcus running round the whole of the carapace, and two which are continuous with it and with one another close behind the rostrum, and diverge as they pass backwards and outwards to include between them an elongated mesial elevation, pointed in front, and rounded posteriorly, which is divided into two by a smaller transverse sulcus. The elevations which these sulci circumscribe are rough, dilated, rounded, and granular, but do not develope pointed projections or teeth. Lateral borders with four rounded teeth, of which the second is bifurcate. Front broad, and slightly emarginate anteriorly, granular above; a low median ridge, passing back from it, crosses the circumferential sulcus and becomes continuous with the mesial elevation. Sternum coarsely tubercular; external maxillipedes closely resembling those of *L. Cumingii* as figured in Bell's Monograph. Anterior limbs as long as the carapace; arm coarsely granular; granules becoming elongated on the upper surface of the wrist and hand into irregularly-placed conical teeth; fingers marked by longitudinal rows of granules, and with acute and incurved points, which cross one another when the hand is closed. Ambulatory legs covered with coarse granulations, which take the form of short spines on the fourth and fifth joints; tarsi hairy. Abdomen of female granulated; the intersegmental lines all distinct; a longitudinal sulcus on each side of the middle line.

Fitzroy Islands (Macleay Museum).

Genus Oreophorus, Rüppell.

Carapace tuberculated, dilated behind over the legs. Antennulary fossæ oblique. External maxillipedes with the palp arcuated, gradually narrowing towards the apex. Anterior legs long, robust; posterior legs sub-equal, hidden under the dorsal shield. Abdomen of the female broadly ovate, the third to the sixth segments coalescent. [*B.*]

248. Oreophorus rugosus. A.M.

Oreophorus rugosus, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, sp. 259; A. Milne-Edwards, Ann. de la Soc. entom., 1865, t. v., p. 152, pl. vi., fig. 3; Nouv. Arch. du Mus., t. x., p. 49.

Carapace sub-pentagonal; antero-lateral borders greatly developed, forming a marked angle at the level of the anterior branchial lobe, slightly undulated; surface covered with deep reticulations near the antero-lateral borders and the branchio-cardiac grooves; branchial regions prominent, strongly dilated, and more elevated than the gastric and cardiac regions. Chelipedes nodular and slightly granular; hand rugose; fingers long, curved inwards, and ornamented with fine denticulations on their cutting edges.

Port Denison (W. A. H.). Found also on the coasts of China and New Caledonia.

Genus Tlos, Adams and White.

Carapace much wider than long, smooth, the lateral regions concave with raised edges, with an anterior and posterior groove; lateral edges divided into three lobes; the middle region with a strong vertical ridge ending behind in an obtuse tubercle, and on each side with two perpendicular, three-sided elevations. Front entire, rounded, reflexed. Chelipedes with the third joint triangular, the edges tuberculiferous, the fourth joint with two tubercular ridges on the upper surface; fifth joint with a tubercular keel above; claws slightly curved at the ends. Abdomen of female oval, tuberculated, seven-jointed, surrounded by an elevated ridge. [*A. & W.*]

249. Tlos muriger. A.M.

Tlos muriger, Adams & White, Zoology of H.M.S. "Samarang," Crustacea, p. 58, pl. xiii., fig. 2.

Carapace smooth; lateral regions deeply excavated; side-margins with three lobes, hind margin excavated, a two-ridged lobe with numerous small tubercles at the base.

Port Molle, 14 fath. (W.A.H., H.M.S. "*Alert.*") Found also on the coast of Borneo.

Genus Arcania, Leach.

Carapace sub-globular, armed with numerous spines or elevated tubercles. Orbits opening upwards and outwards. Antennulary fossæ longitudinal. External maxillipedes with the palp straight, linear, the internal apex emarginate-truncate; the inner ramus gradually pointed. Anterior legs very slender. Abdomen of the male lanceolate, with the third to the sixth or fifth coalescent. [*B.*]

250. Arcania novem-spinosa.

Arcania novem-spinosa, Adams and White, Zoology of the "Samarang," Crustacea, p. 56, pl. xiii., fig. 1; Bell, *l. c.*, p. 309; Haswell, l. c., p. 58.

Carapace smooth, granular, antero-lateral margins with two spines; postero-lateral margins with two spines; posterior border with one spine. [*A. & W.*]

Darnley Island; Cape Grenville; Cape York (Macleay Museum).

251. Arcania granulosa.

Arcania granulosa, Miers, l. c., p. 240, pl. xxxviii., fig. 29; Haswell, l. c., p. 58.

Carapace granular, sub-globose, without tubercles, borders armed with ten short acute spines; intestinal region with a single spine.

Moreton Bay (Brit. Museum).

252. Arcania pulcherrima.

Arcania pulcherrima, Haswell, l. c., p. 58, pl. vi., fig. 4.

Carapace globose, rather broader than long, covered with vertically elongated granules, and armed above with thirteen tubercles or short spines which are covered with granules similar to those on the rest of the carapace. Lateral border armed with six spines, lateral pair much the longest, hardly appreciably flattened and slightly curved upwards; covered, in common with the others, with granules like those on the surface of the carapace. Front prominent, emarginate. Anterior limbs more than twice as long as the carapace; arm slender and tuberculated; hand smooth, slightly swollen at the base, and tapering towards

the fingers which are very slender, and armed on their inner margins with fine denticles and a few larger triangular teeth. Posterior limbs slender, cylindrical and smooth. Abdomen (female) ovoid, granulated; the compound part with no trace of intersegmental lines, but traversed by well-marked longitudinal sulci. Colour nearly white, with a blush of red over the lateral parts of the carapace and the lateral spines, and a band of the same colour on the upper surface of the arm.

Darnley Island, Torres Straits (Macleay Museum).

Genus Ixa, Leach.

Carapace elliptico-rhomboid, with a sub-cylindrical process arising from the branchial region on either side; regions separated by a deep sulcus. Orbit with two fissures above. External maxillipedes with the palp broad obtuse, longer than the endopodite. Feet all filiform, slender. Abdomen of the female with the last joint produced as far as the oral aperture. [*B.*]

253. Ixa inermis.

Ixa inermis, Leach, Zool. Misc., iii., p. 26, t. 129, fig. 2; Milne-Edwards, Hist. Nat. Crust. ii., p. 135.

Lateral processes unarmed.

Cape Grenville (Macleay Museum).

Genus Persephona, Leach.

Carapace oval or orbicular, depressed, armed posteriorly with two or three teeth. Pterygostomian regions angulated. Orbits with three fissures. Antennulary fossæ transverse. External maxillipedes with the palp little dilated, gradually narrowing, truncated internally at the apex. Anterior legs robust, not twice as long as the carapace; the remaining pairs with the last and penultimate joints compressed. Abdomen of the male with the third to the fifth segments coalescent; of the female the fourth to the sixth. [*B.*]

254. Persephona tuberculosa.

Persephona tuberculosa, A. Milne-Edwards, Journ. des Mus. Godeffroy, Band i., Heft iv., p. 86.

Carapace quadrate, dilated, ornamented with compressed granules which are larger towards the margin; gastric region with three tubercles; cardiac region with a large tubercle circumscribed by a very narrow fissure; posterior margin with two tubercles; anterior legs long, granulated.

Bass' Straits (Godeffroy Museum).

Genus Actæomorpha, Miers.

Carapace convex, with the antero-lateral margins arcuate as in the *Cancroidea*. Buccal cavity broader and less decidedly triangulate than is usual in the *Oxystomata*. Abdomen of the male seven-jointed.

255. Actæomorpha erosa.

Actæomorpha erosa, Miers, Journ. Linn. Soc., Zool., Vol xiii., p. 1, pl. xiv.

Carapace everywhere granulated, the granules interspersed with small deep pits. A large rounded elevation behind each orbit, one on the cardiac region, and one on each branchial region near the lateral margin. Anterior legs obscurely granulated, robust; arm very short, hand but little longer than the wrist; fingers straight, acute. Ambulatory legs short, nearly smooth, laterally compressed. Tarsi very small, slender and acute. [*M.*]

Port Curtis (Brit. Museum).

Family II. MATUTIDÆ.

Afferent canal to the branchiæ entering at the side of the pterygostomian region. Terminal joints of the external maxillipedes concealed, third joint triangular, palp scarcely longer than the second joint. Male genital appendices arising from the base of the fifth pair of legs. Legs usually natatorial.

Genus Matuta, Fabr.

Carapace sub-orbicular, with a strong spine at the junction of the antero-lateral and postero-lateral margins. Four posterior pairs of legs with the last and penultimate joints expanded.

256. Matuta victrix. A.M.

Cancer victor, Fabr., Spec. Ins., ii., Append., p. 502 (1781); Ent. Syst., ii., p. 449 (1798).

Matuta victor, Fabr., Ent. Syst., Suppl., p. 369 (1798); ?M.-Edw., Hist. Nat. Crust., ii., p. 115, pl. xx., figs. 3–6 (1837); Règne Animal de Cuvier, Atlas, Crustacés, pl. vii., fig. 1.

Matuta peronii, Leach, Zool. Miscell., iii., p. 13, pl. 127, figs. 1, 2 (1817).

Matuta lesuerii, Leach, Zool. Misc., iii., p. 14 (1817).

Matuta victrix, Miers, Trans. Linn. Soc. (2nd Series), Zoology, Vol. 1, p. 243, pl. xxxix., figs. 1–3 (1877).

Carapace finely but distinctly granulated; two anterior tubercles of the carapace obsolete, the remainder faintly marked. Lateral marginal spine long, directed slightly forwards. Front slightly emarginate, with the lobes rounded; hand not granulous upon its external surface, the tubercles on the upper half sharply defined; a small tubercle, followed by a very strong conical spine at the base of the oblique ridge, which is interrupted at the base, and obscurely defined. Ridge upon the external surface of the mobile finger strongly beaded. Spots upon the carapace numerous, minute, simple, scattered, and without any tendency to form reticulating lines. [*M.*]

Port Jackson. A widely distributed species.

257. Matuta lineifera. A.M.

Matuta lineifera, Miers, l. c., p. 245, pl. xxxix., fig. 7.

Carapace very finely granular, tubercles strongly marked, the two anterior distinct as well as those of the postero-lateral margins. Front emarginate, the lobes more acute than in *M. victrix;* hand of male nearly as in that species, but with the spine at the base of the oblique ridge shorter. Carapace marked with dark red, thread-like, usually uninterrupted lines, forming irregular loops and circles. [*M.*]

N. W. Australia, Nicol Bay (Brit. Museum); Chowder Bay.

258. Matuta granulosa. A.M.

Matuta granulosa, Miers, l. c., p. 245, pl. xxxix., figs. 8 & 9.

Carapace rather coarsely granulated, especially towards the lateral marginal spines. Two anterior dorsal tubercles obsolete, the others and those on the postero-lateral margins very indistinct. Lateral marginal spines short, conical, and rather obtuse. Front

slightly but distinctly emarginate, with the lobes rounded. Hand of male with the upper and lower part granulous between the tubercles; the ridge upon the outer surface in the male divided into five acute tubercles, of which the second is the largest. Ridge upon the external surface of the mobile finger thin, smooth, not beaded. Spots upon the carapace brownish-red. A brownish-red patch on the basal half of each lateral spine. [*M.*]

Port Denison; Port Curtis.

259. **Matuta picta.** A.M.

Matuta lunaris, Leach, Zool. Misc., iii., p. 13, pl. cxxvii., figs. 3–5.

Matuta planipes, Desm., Cons. Crust., p. 102 (1825), nec Fabr.

Matuta picta, Hess, Arch. für Nat., xxxi., p. 158, pl. vi., fig. 13 (1865).

Carapace distinctly granulated. Tubercles of the carapace and postero-lateral margins strongly marked. Lateral marginal spine of moderate length, directed slightly forward. Front obtuse and rounded, or slightly emarginate. Hand not granulous upon its external surface; tubercles on the upper part rounded and obtuse; ridge on external surface divided into four or five lobes, of which the second is an acute spine, the remainder small, obtuse, or truncate. Ridge upon the mobile finger distinctly striated in the greater part of its length, and beaded at the distal extremity. Spots upon the carapace very numerous and minute, often disposed in reticulated lines. [*M.*]

Port Jackson; Moreton Bay, etc.; also found at Ceylon, Zanzibar, the Mauritius, and the Seychelles.

Family III. CALAPPIDÆ.

Afferent canal to the branchiæ entering behind the pterygostomian regions. Genital appendages of the male exserted from the base of the fifth pair of legs. Terminal joints of the external maxillipedes not concealed beneath the second and third joints.

Genus Calappa, Fabr.

Carapace very convex, broad behind, arcuate in front, with the latero-posterior margin produced over the ambulatory legs,

and forming large vaulted lateral expansions. Terminal joints of the external maxillipedes not concealed. Anterior legs large, and capable of being applied closely to the body, hands compressed, with a high dorsal ridge. Ambulatory legs slender and of moderate length, tarsi styliform. Abdomen of male five to seven-jointed.

260. **Calappa hepatica.** A.M.

Cancer hepaticus, Linn. Syst. Nat., p. 1048 (1766).

Calappa tuberculata, Fabr., Ent. Syst. Suppl., p. 345 (1798); Herbst, Kr., i., pl. xiii., fig. 78 (1796); M.-Edw., Hist. Nat. Crust., ii., p. 106 (1837).

Calappa hepatica, Miers, Cat. Crust. N.Z., p. 55 (1876).

Carapace tubercular and granulous above, with about a dozen triangular very distinct teeth on the antero-lateral margin, and four wide flat acute teeth upon the front margin of the lateral wings of the carapace, which are very large. Posterior margin of the carapace entire, outer surface of the hands tubercular, but without spines.

Generally distributed in Eastern Seas.

Family IV. DORIPPIDÆ.

Afferent channel of the branchial cavity situated on the posterior portion of the pterygostomial region. Terminal joints of the external maxillipedes not concealed by the preceding. The two to four posterior legs sub-dorsal, prehensile. Genital appendages of the male inserted on the sternum. [*D.*]

Genus Dorippe, Latr.

Afferent aperture of the branchial cavity formed by a large excavation of the pterygostomial region, and separated from the base of the anterior legs. Last two pairs of legs elevated on the carapace. Eyes retractile.

261. **Dorippe astuta.** A.M.

Cancer pinnophylax, Fabr., Ent. Syst., t. ii., p. 444; Linn. Syst. Nat.

Dorippe astuta, Fabr., Ent. Suppl., p. 361; M.-Edw., Hist. Nat. Crust., ii., p. 157.

Cancer astuta, Herbst, t. iii., p. 45, pl. lv., fig. 6.

Carapace much elongated, flat, almost completely smooth above, but presenting a few deep grooves, and almost devoid of hairs. Front very prominent and widely excavated, so as to present two triangular, flattened teeth; neither tooth nor dilation above the internal orbital angle; tooth of the lower orbital border rudimentary; buccal orifice terminating in the mesial notch of the front. Hands of the male short, thick, and much swollen. Abdomen without dentiform tubercles. [*M.-E.*]

Port Denison. Found also in Asiatic Seas.

262. **Dorippe quadridentata.** A.M.

Dorippe quadridentata, Fabr., Ent. Suppl., p. 361; M.-Edw., Hist. Nat. Crust., ii., p. 156; Latr., Hist. Nat. des Crust., t. vi., p. 125; Encycl., pl. 306, fig. 1; Desmarest, Cons., p. 135.

Cancer Frascone, Herbst, t. i., p. 192, pl xi., fig. 70.

Dorippe atropos, Lam., Hist. des An. sans Vert., t. v., p. 245.

Dorippe nodulosa, Guérin, Iconogr., pl. xiii., fig. 2.

Carapace greatly elongated anteriorly, very unequal, and ornamented with twelve to fifteen rounded tubercles. Front lamellar, prominent, and forming two triangular teeth; external orbital angle very prominent, and the internal portion of the lower orbital border forming a large tooth pointed and denticulated below, which projects much in advance of the front, and almost reaches the level of the origin of the flagellum of the antennæ. Anterior extremity of the buccal orifice not reaching to the border of the front. Anterior legs granular in the male; second and third segments of the abdomen each armed with three dentiform tubercles disposed in transverse rows. In the male a large tooth and two very small ones on the fourth segment of the abdomen. [*M.-E.*]

Port Denison.

Genus Cymopolia, Roux.

Afferent opening of the branchial cavity situated as usual between the posterior border of the pterygostomial region and the base of the first pair of legs. Last pair of legs very small; fourth pair like the preceding. Eyes retractile. [*M.-E.*]

263. **Cymopolia Jukesii.** A.M.

Cymopolia Jukesii, White, App. Jukes' Voy. "Fly," p. 338, pl. ii., fig. 1 (1847); List Crust. Brit. Mus., p. 54 (1847); Miers, Zool. "Erebus and Terror," Crust., p. 4, pl. iii., fig. 4.

Carapace wider than long, covered with minute granules, the front with two rounded teeth in the middle; behind each eye there are two fissures, the outer one smaller than the other; the side of the carapace with three teeth, inclusive of the outer orbital angle, followed by two or three small tubercles. Hands filiform, grooved, fingers crossing at the tips; second pair of legs much smaller than the third and fourth pairs; third and fourth pairs of legs with the third joint of a longish oval shape, slightly toothed on the edge; upper surface with a few tubercles, fifth joint with the outer edge fringed with hairs. [*White.*]

Port Denison; Torres Straits; Sir Charles Hardy's Island.

Tribe ANOMOURA.

Abdomen sometimes extended backward, sometimes deflexed beneath the body, and nearly always bearing more or less well-developed appendages upon its penultimate segment. Sternum usually linear between the last three pairs of legs.

Section ANOMOURA SUPERIORA.

Eyes not anterior to the first pair of antennæ. Second pair of antennæ sometimes posterior, but not exterior to the eyes. Abdomen narrow, often adpressed to the sternum, without caudal appendages.

Sub-Tribe DROMIDEA.

Carapace sub-globose, sub-triangular, or sub-quadrate. Eyes placed near to one another. Buccal cavity quadrilateral. Anterior legs with a well-developed hand. Posterior pair of ambulatory legs smaller than the preceding, raised above the rest, and placed sub-dorsally upon the carapace, terminating in a curved, and more or less prehensile claw.

Genus CRYPTODROMIA, Stimpson.

Carapace convex, pubescent, scarcely pilose. Palate with a ridge on each side. The sternal *sulci* in the female remote from

one another, only produced to the segment bearing the second pair of legs, terminating in tubercles. Legs like those of *Dromia*, but nodose.

Species of small size.

264. Cryptodromia lateralis. A.M.

Dromia lateralis, Gray, Zool. Misc.

Cryptodromia lateralis, Stimpson, Proc. Acad. Nat. Sci. Philad., p. 226 (1858).

Carapace sub-globose, evenly convex, front rather produced, three-lobed, the median lobe deflexed, the lateral lobes triangular. Antero-lateral margins with two teeth and a smaller tooth upon the pterygostomian region. Anterior legs with arm and wrist tuberculated, hand granulous externally, and tuberculated above; ambulatory legs with the distal extremities of the joints nodose.

Port Jackson (very common); Port Stephens; Tasmania, etc. Found also in New Zealand.

This species almost invariably has a sponge fixed on its carapace, covering it completely.

Genus DROMIA, Fabr.

Carapace pilose, sub-orbiculate, front sub-triangulate, narrow, the eyes approximated. Feet thick, short; fourth and fifth short, sub-dorsal. Sternal sulci in the female approximated.

265. Dromia australiensis. A.M.

Dromia australiensis, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Carapace longer than broad, evenly convex above, covered, together with the under-surface and limbs, with adpressed hairs. Front strongly deflexed, three-toothed, the mesial tooth small rounded, directed downwards, not visible when the carapace is viewed from above, the lateral teeth more prominent, obtuse. Upper orbital margin very prominent, forming a rounded lobe; infra-orbital tooth prominent, conical. Antero-lateral border convex, with three teeth, the first of which is the largest, while the other two are sub-equal and rudimentary; a small tooth behind the cervical groove. Chelipedes slightly nodose. Length 1 inch; breadth $1\frac{1}{8}$ inch.

Port Denison (W.A.H., H.M.S. "*Alert*"); Port Jackson.

266. **Dromia excavata.** A.M.

Dromidia excavata, Stimpson, Proc. Acad. Nat. Sci. Phil., x., sp. 277.

Carapace as broad as long, regularly convex; surface covered with minute pores and covered with coarse hairs. Front strongly deflexed in the middle, mesial tooth triangular, acute, directed downwards, barely visible when the carapace is viewed from above; lateral teeth conical, sub-acute. A small tooth in the middle of the upper orbital margin; external orbital tooth small; infra-orbital tooth well developed; one or two granules near the latter on the sub-hepatic region. Sub-hepatic regions deeply concave, producing a concavity in the anterior portion of the antero-lateral boundary of the carapace when viewed from above, bounded behind by a conical tooth, behind which again the border is convex and entire as far as the cervical groove; postero-lateral border short. Chelipedes not nodose, a conical tooth at the internal and distal angle of the carpus; fingers strongly toothed. Length $\frac{3}{4}$ inch.

Port Stephens, about five fathoms; Port Jackson.

The nearest ally of this species seems to be the *D. globosa* of Lamarck; it is distinguished from it by the absence of the tooth on the lateral border in front of the cervical groove.

267. **Dromia octodentata.**

Dromia octodentata, Haswell, l. c.

Carapace broader than long, evenly convex, shining, ornamented with numerous minute pores. Frontal teeth sub-equal, conical, the middle one directed downwards, a conical tooth about the middle of the upper orbital margin; infra-orbital tooth rather prominent. Antero-lateral border with four small conical teeth, the first separated by a short interval from the external orbital angle, and by a nearly equal distance from the second, third small, separated from the second by about twice the distance which separates the first two; fourth larger than the third, separated from it by an interval similar to that between the first and second; a little in front of the third tooth is a low rounded tubercle. An acute tooth immediately behind the cervical suture. An acute tooth at the distal end of the upper border

of the carpus; hand with a row of about half-a-dozen granules above. Length 1½ in.; breadth 1⅝ in.

Adelaide (Australian Museum).

268. **Dromia sculpta.**

Dromia sculpta, Haswell, l. c.

Carapace about as broad as long, ornamented, as well as the limbs, with numerous rounded granules, but free from conspicuous hairs; gastric and anterior branchial and hepatic regions very prominent, tuberculated, each of the tubercles capped with a group of granules. Front very prominent, with three teeth, of which the mesial is the smallest, is triangular and sub-acute, directed slightly downwards, but quite visible when the carapace is viewed from above; lateral teeth each with an accessory denticle on its outer border (representing the supra-orbital tooth). External orbital and infra-orbital teeth rudimentary. Carpus of chelipedes with two prominent conical spines near the distal end of its upper surface; three similar spines or teeth on the upper surface of the hand, two close above the insertion of the dactylus, the third at the proximal end. Merus, carpus, and propodos of ambulatory limbs ornamented with a few short blunt spines or tubercles, and with a few scattered short hooked hairs. Segments of the abdomen (except the last) each ornamented with four compressed tubercles, Length of carapace $\frac{7}{16}$ in.

Port Jackson, in a few fathoms of water; Port Stephens.

269. **Dromia conchifera.** Plate iii., fig. 4.

Dromia conchifera, Haswell, l. c.

Carapace longer than broad, nearly flat above, very slightly convex. Lateral borders entire with the exception of a small tooth situated some distance in front of the transverse groove, and separating a convex antero-lateral portion from a longer postero-lateral portion, which is slightly concave in front and slightly convex posteriorly. Front tridentate, bordered with minute granules, the mesial tooth excessively minute, the lateral teeth dorso-ventrally compressed, triangular, acute; well developed supra-orbital and infra-orbital teeth. Under surface of the body and limbs rather closely covered with granules. Carpus

of chelipedes with a prominent conical projection on its outer surface, and a smaller one internal to the first; hand ornamented with longitudinal rows of granules, two rounded tubercles above the insertion of the dactylus. Dactylus granulated at base. Carpus of ambulatory limbs, except the last, each with a small conical tooth; fourth pair shorter than the third, but very stout, the carpus broad and thick with a deeply excavated "palm," bounded by a stout conical tooth set at right angles to the axis of the joint; dactylus very powerful, strongly curved, rather longer than the propodos. Whole surface covered with a short close green pubescence; dactyli and granules tinged with crimson. Length $\frac{2}{3\frac{1}{2}}$ in.; breadth $\frac{1}{8}$ in.

Port Denison, 5 fath.; Port Molle, 15 fath. (W. A. H., H.M.S. "*Alert.*")

This species has the curious habit of protecting itself with the valve of a Lamellibranch, which it holds tight over its back by means of its unusually powerful and specially adapted fourth pair of ambulatory legs.

Family PARATYMOLIDÆ.

Carapace in general form similar to the *Maioidea*. External maxillipedes produced partly over the epistome.

The position of this family is uncertain. It is perhaps better placed among the *Corystoidea*.

Genus PARATYMOLUS, Miers.

Carapace deflexed in front, flat behind, with the sides nearly straight. Front prominent, narrow.

270. Paratymolus bituberculatus.

Paratymolus bituberculatus, Haswell, Ann. and Mag. Nat. Hist. (5), Vol. v., p. 303, pl. xvi., figs. 1 and 2 (1880).

Carapace and limbs covered with a close pubescence. Rostral spines short, blunt; a short spine or tooth above the eye, and two others on the lateral border behind it, the hindermost the largest and placed at the angle of junction of the antero-lateral and postero-lateral borders; a small conical tooth situated about the middle of the postero-lateral border; gastric region with

two prominent conical tubercles. Arm with four small teeth on its posterior border; wrist armed with a long slender spine; hand sub-triangular, in lateral outline, the upper border produced into a prominent tooth above the insertion of the dactylopodite, outer surface ornamented with two fasciculi of short stiff setæ. Ambulatory legs slender, terminal joint longer than the penultimate.

Gloucester Passage, Port Denison, about five fathoms.

271. **Paratymolus latipes.**

Paratymolus latipes, Haswell, l. c., p. 303, pl. xvi., figs. 3–5.

Carapace and limbs closely pubescent. Rostrum of two broadish lobes, each armed externally with a short acute spine directed forwards and slightly inwards; antero-lateral border with four acute spines, the first (the shortest) placed in front of the eye, the second behind it, and the third (the longest) about half way between the second and the fourth, which occupies the lateral angle; dorsal surface smooth. Anterior legs stout. Arm provided with a few small slender spines on its internal and inferior borders; wrist armed at its internal and distal angle with a short stout spine; hand compressed, its outer surface ornamented with numerous granulations and a few minute spinules, upper border with a row of minute spinules, inner surface smooth. Ambulatory limbs laterally compressed.

Port Denison; Port Jackson. Dredged in depths of under ten fathoms.

Sub-Tribe Raninidea.

Carapace oblong. Mouth and efferent channel as in the *Leucosiidæ*.

Genus Ranina, Lam.

Carapace triangular in outline, with the base forwards and the apex rounded. Surface convex and unequal. Anterior border very long, nearly straight, and armed with strong teeth, of which the median constitutes a small rostrum. Lateral borders curved regularly inwards. Ocular peduncles composed of three pieces; orbits very deep. Internal antennæ not lodged in a fossa; provided with two short terminal flagella. External antennæ

thick and very short; basal joints expanded; flagellum very short. External maxillipedes operculiform, Anterior legs very strong, but of moderate length; carpus much flattened, immobile finger acutely deflexed. Four posterior pairs of legs with the terminal joint lamelliform; the fourth pair inserted above the third, and the fifth above the fourth.

272. **Ranina dentata.**

Ranina serrata, Lamarck, Hist. des Anim., s. Vert., t. v., p. 225; Desmarest, Cons., p. 140; Guérin, Iconogr. Crust., pl. xiv., fig. 3.

Ranina dentata, Latreille, Encyclop., t. x., p. 268; Milne-Edwards, Hist. Nat. Crust., t. ii., p. 194, pl. xxi., figs. 1–4; De Haan, Faun. Jap., Crust., p. 139, pl. xxxv., figs. 1–3.

Carapace covered with depressed, narrow, and much elongated tubercles; antero-lateral border concave in the male, convex in the female, and divided into seven lobes of which the median, which is not at all prominent, presents in the middle a triangular rostrum, and on each side a prominent tooth; the internal lateral lobes thick and terminating in a single tooth, the median lateral armed with two teeth, the external lateral with three, which are flattened, triangular, and rather large in the male; immediately behind these on the lateral border, is another tridentate lobe of similar shape; the rest of the lateral border finely denticulated. Anterior legs rough; two stout spines on the upper border of the carpus and of the hand; five teeth on the lower border of the hand; mobile finger denticulated above and below. [*M.-E.*]

Eastern Australian Coast. Found also in the Indian Seas.

Genus Lyreidus, De Haan.

Sides of the carapace converging anteriorly, the antero-lateral margin very oblique, almost longitudinal, the anterior margin very narrow. Tarsi of the second, third, and fifth feet narrow; fifth pair of legs small, almost filiform.

273. **Lyreidus tridentatus.** A.M.

Lyreidus tridentatus, De Haan, Fauna Japonica, Crust., p. 140; pl. v., fig. 6 (1849).

Greatest breadth of carapace considerably greater than half the length. An acute spine directed forwards situated at the junction of the antero-lateral and postero-lateral borders. Front trilobate, the mesial lobe broad at the base, triangular, acute, the lateral lobes narrower, acute. Surface of carapace minutely and closely punctate. Carpus of chelipedes armed with two acute spines above; hand compressed, carinate above, the carina ending anteriorly in a small spinule; the lower border with three acute spines; immobile finger perpendicular to the direction of the axis of the hand; extremities of fingers hooked, acute.

A specimen of this species was obtained with the dredge at Port Stephens, and another is in the collection of the Hon. William Macleay, and was dredged outside the "heads" of Port Jackson. It was originally found on the Coast of Japan. The Australian specimens agree closely with De Haan's figure, and that obtained recently by Capt. St. John in the Japanese Seas, and described by Miers (P.Z.S., 1879, p. 46), belongs certainly, as the latter conjectures, to a distinct species.

Section ANOMOURA MEDIA.

Eyes not anterior to the antennules. Antennæ behind and external to the eyes. Abdomen inflexed but not closely appressed, provided with caudal appendages. Mouth never as in the *Leucosiidæ*.

Sub-Tribe PORCELLANIDEA.

Carapace sub-orbiculate. External maxillipedes scarcely operculiform, the third joint little smaller than the second. Second, third, and fourth legs gressorial, fifth weak, inflexed.

Genus PETROLISTHES, Stimpson.

Carapace depressed, sub-ovate, not broader than long, the front triangular, prominent, margin more or less undulated, toothed or entire. Eyes rather large. Antennæ with the peduncle more or less cristate, the first joint of the external antennæ short, not reaching the margin of the carapace. Hands broad, depressed. Tarsi of the ambulatory legs short, rather robust, with a single claw. [*M.*]

Sub-Genus Petrolisthes.

Sides of the rostrum entire. Lateral margins of the carapace with only a single post-ocular spine, or smooth. Anterior legs with the arm and hand broad, of moderate length; arm usually with teeth on the anterior margins. [*M.*]

274. Petrolisthes elongatus.

Porcellana elongata, M.-Edw., Hist. Nat. Crust., ii., p. 251; White, Dieffenbach's New Zealand, ii., p. 265.

Petrolisthes elongatus, Miers, Zool. "Erebus and Terror," Crust., p. 3, pl. iii., fig. 3 (1874); Cat. Crust. N.Z., p. 60 (1876).

Carapace slightly granular; gastric region with two slight elevations, and separated from the rest of the carapace by a very distinct groove; lateral borders of the carapace acute. Front triangular, little deflexed, very prominent, with a deep mesial furrow. Anterior legs having the posterior border of the carpus armed with two or three spiniform teeth, a very obtuse tooth at the base of its anterior border. [*M.-E.*]

Said to occur on the Australian Coast; found also in New Zealand.

275. Petrolisthes dentatus. A.M.

Porcellana dentata, M.-Edw., Hist. Nat. Crust., t. ii., p. 251.

Front triangular, moderately prominent, with a mesial groove, but without well-marked lateral grooves. Anterior border of the carpus armed with four to five broad flattened teeth, its posterior border with a row of teeth. [*M.-E.*]

Port Denison.

276. Petrolisthes inermis. A.M.

Petrolisthes inermis, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Carapace longer than broad, rather flat above, obscurely lineolate behind and at the sides. Front rather prominent, triangular, with a deep longitudinal mesial furrow. Anterior legs rather depressed, the carpus as long as the carapace, its anterior border acute, with a low tooth near its proximal end, its posterior border with two teeth, the second at the distal end, the first near it. Ambulatory legs transversely lineolate, free from teeth or spines. Length $\frac{5}{16}$ in.; breadth $\frac{1}{4}$ in.

Port Denison (Mr. Alex. Morton).

This species is a close ally of *P. japonica*, De Haan, but differs from it in having but two teeth on the anterior border of the carpus of the anterior legs and other points; it is distinguished from *P. elongatus*, as figured in the Voyage of the "Erebus and Terror," by having all the limbs much more slender.

Sub-Genus Petrocheles, Miers

Sides of the rostrum spinose. Lateral margins of the carapace with a series of spines. Anterior legs elongated, slender, arm with a series of spines on the anterior margin.

277. Petrocheles australiensis. A.M.

Petrocheles australiensis, Miers, Cat. Crust. N.Z., p. 61 (1876).

Carapace depressed, lateral margins with a series of ten or eleven small spines. Front prominent, lateral margins with three or four spinules; two spines on the carapace at the base of the front. Two longitudinal series of eight spines each on the upper and posterior surface of the arm, the upper margin of the mobile finger spinulous. [*M.*]

Mordialloc, Victoria.

Genus Porcellana, Lamarck.

Carapace usually convex, as broad as long, sometimes broader, sub-orbicular and depressed above. Peduncle of the antennæ cylindrical, not crested, first joint extending to the margin of the carapace.

278. Porcellana biunguiculata. A.M.

Porcellana biunguiculata, Dana, U.S. Explor. Exped., Crust., i., p. 411, pl. xxvi., fig. 1 (1852).

A little transverse, very convex and sub-globose, smooth; front as seen from above straight. Anterior feet of moderate size; carpus more than twice as long as broad, entire, smooth; and smooth, obsoletely punctate, wholly naked, fingers very much gaping, the superior quite regularly and largely arcuate. Following feet naked, or very nearly so, tarsus short; profoundly two-clawed. [*D.*]

Holborn Island, off Port Denison, 20 fathoms (Mr. Alex. Morton).

279. Porcellana pulchella.

Porcellana pulchella, Haswell, l. c.

Carapace oval in outline; surface very obscurely lineolate; lateral margins entire. Front broad, nearly straight, but with a very obscure mesial lobe; inner orbital angles very slightly projecting. Chelipedes large, the right the larger; carpus strongly tuberculated above, armed with two conical teeth internally; propodos ornamented externally with four longitudinal ridges, strongly tuberculated in the smaller chelipede, nearly smooth in the larger, and separated by deep sulci. Ambulatory legs with a few obscure granules above. Length of carapace $\frac{1}{8}$ in. Colour cream colour, with six rounded orange spots on the carapace, and others on the chelipedes and ambulatory limbs.

Holborn Island, 20 fathoms; Port Molle.

This species is allied to *P. sculpta*, Milne-Edwards, but differs from it in having two teeth on the anterior border of the carpus; from *P. pisum* it is distinguished by the possession of the flat tubercles on the carpus, and the longitudinal sulci on the propodos.

280. Porcellana vigintispinosa. A.M.

Porcellana vigintispinosa, Haswell, l. c.

Carapace faintly lineolate; front trilobed, the middle lobe sub-acute, more prominent than the lateral which are obscure; four minute acute spiniform teeth on the lateral border just behind the eye, the last of the four the largest; further back and separated by an interval from these are six more acute teeth, the first three very small, the last three larger. Left chelipede larger than the right; merus strongly crested internally, the crest armed with one or two obscure denticles; carpus with a sharp crest, divided into three teeth in its proximal portion, entire in its distal portion; propodos rounded, smooth. Length $\frac{5}{16}$ in.

Holborn Island, 20 fathoms (Mr. Alex. Morton).

281. Porcellana nitida. A.M.

Porcellana nitida, Haswell, l. c.

Carapace a little longer than broad, closely lineolate. Front prominent, trilobed, the central lobe much larger than the

others, triangular, the lateral lobes very small; two acute teeth behind the orbit, and a rounded lobe on the lateral border a little further back. Carpus of chelipedes a little longer than broad, smooth, with a sharp entire internal crest; propodos smooth, narrow; fingers hooked and crossing one another at the tips. Length ¼ in.

Port Denison, five fathoms.

282. Porcellana triloba.

Porcellanella triloba, White, Voyage of H.M.S. "Rattlesnake," Appendix, p. 394, pl. v., fig. 2.

Carapace somewhat flattened; front produced into three large teeth or lobes; the middle lobe the widest and most prominent, the sides of the outer lobes rounded; carapace longer than wide, the upper surface smooth, polished, with some transverse lines, which are most observable in front and at the sides. Chelipedes long and smooth, the finger crossing at the tips, their inner edge rough, scarcely toothed; propodos rounded internally, keeled externally, ornamented in the distal half with a thickish line of hairs.

Cape Capricorn, 15 fathoms.

283. Porcellana dispar. A.M.

Porcellana dispar, Stimpson, Proc. Acad. Nat. Sci., Philad., x., sp. 297.

Carapace a little asymmetrical, smooth, pubescent at the sides. Lateral margin with two denticles near the middle, and armed with a spinule above the insertion of the antennæ. Front nearly straight, scarcely convex, acutely deflexed in the middle. Chelipedes very unequal; the larger smooth; carpus angulated in the middle, the anterior margin undulated; propodos broad, naked, not twisted; fingers punctate, dactylus curved, armed internally with a single tooth. Smaller chelipede with the propodos acutely angulated, the outer border pubescent; fingers much contorted and curved inwards, ornamented with long hairs; carpus bidentate on its anterior margin—the teeth obtuse.

Port Jackson; Port Stephens.

A very common species in Port Jackson. The asymmetry of the carapace described by Stimpson is abnormal, being due to

the frequent presence of a Bopyrid parasite in the branchial cavity of one side. The shape of the chelipedes varies much with age.

284. Porcellana corallicola. A.M.

Porcellana corallicola, Haswell, l. c.

Carapace slightly tuberculated at the sides; the regions well marked. Front not prominent, triangular, with a deep longitudinal mesial furrow, its anterior border ornamented with minute denticles which are sometimes acute, sometimes obtuse. Lateral borders with four or five minute spine-like denticles situated about the middle of the branchial region. Carpus and propodos of chelipedes fringed externally with hairs, flat above, curved below; internal and external borders of carpus armed with a row of acute denticles; upper surface with three longitudinal rows of granules separated by sulci; hand compressed, triangular, with rows of granules; fingers compressed, granular, their inner borders nearly straight, their apices scarcely hooked. Length $\frac{3}{16}$ in.

Port Molle, on coral reefs (W. A. H.).

285. Porcellana transversa. A.M.

Porcellana transversa, Haswell, l. c.

Carapace much broader than long, nearly smooth, lineolate behind, the regions faintly defined; protogastric lobes prominent. Front not prominent, nearly straight; lateral margins entire, scarcely crested. Merus of chelipedes transversely lineolate, hairy; carpus one and a half times as long as broad, fringed with hairs on its inner border, which projects in the form of a crest, nearly smooth above; propodos thickly clothed with hairs externally, a longitudinal granular line at its lower border, running to the end of the immobile finger, which has a conical tooth at the base of its cutting edge, and is strongly hooked at its apex; mobile finger with a granular hairy ridge above, a slight conical tooth at the base of its cutting edge, and with the apex strongly hooked and acute. Length $\frac{5}{16}$ in.; breadth $\frac{7}{16}$ in.

Bowen; found by Mr. Alex. Morton in the siphons of an *Aspergillum*.

Sub-Tribe HIPPIDEA.

Carapace oblong, convex, and rounded above. Either the external or internal antennæ very long. External maxillipedes somewhat operculiform, with the terminal joints considerably developed. First pair of legs monodactyle or subchelate, the three following pairs with the terminal joints more or less expanded, lamellate. Fifth pair of legs filiform, inflexed.

Genus REMIPES, Latr.

Carapace regularly oval, less than one and a quarter times as long as broad. Front rather wide and truncate. External angle of the orbit much more prominent than the front. Eyes scarcely retractile, peduncle composed of two mobile portions. Internal antennæ inserted beneath the eyes, large, with long, multi-articulated flagella. External antennæ short and very broad. External maxillipedes short and broad, with the third joint operculiform, the three terminal joints constituting a semi-prehensile organ. Anterior legs very long, broad at base, terminal joint styliform, acute, and slightly flattened, terminal joints of the next two pairs expanded and lamellate, of the fourth pair nearly conical. Fifth pair of legs slender and concealed beneath the carapace. Sternum linear. Abdomen long, terminal segment far exceeding in length the rest of the abdomen.

286. Remipes testudinarius.

Hippa adactyla, Fabr., Suppl., p. 370.

Cancer emeritus, Herbst, p. 8, pl. xii., fig. 4.

Remipes testudinarius, Milne-Edwards, Hist. Nat. Crust., ii., p. 206, pl. xxi., figs. 14–20.

Carapace covered with small, transverse, short and arched, crenulated striæ. Front excavated in the middle, and less prominent than the external orbital angle. Lateral borders of the carapace thin, and surmounted by a groove ornamented with very short fasciculi of hairs so as to appear denticulated. The length of the anterior limbs varies according to the sex. [*M.-E.*]

Section ANOMOURA SUBMEDIA.

Eyes distinctly in front of the first pair of antennæ. Abdomen much dilated, inflexed, but not closely appressed, without caudal appendages.

Sub-Tribe Lithodea.

Carapace sub-triangulate as in the *Maioidea*. Abdomen broad, almost symmetrical. None of the feet natatorial, the second, third, and fourth alike, the fifth small, inflexed beneath the carapace.

Genus Lomis, Milne-Edwards.

Carapace depressed, rostrum rudimentary; surface tomentose. Ocular peduncles triangular. Fifth joint of the outer maxillipedes very broad. Chelipedes very large, broad, and depressed. Following three pairs of legs with the last joint sub-conical; last pair very slender.

287. Lomis hirta. A.M.

Porcellana hirta, Lamarck, Hist. des An. s. Vert., t. v., p. 229; Desmarest, Consid., p. 295.

Lomis hirta, Milne-Edwards, Hist. Nat. Crust., ii., p. 188; Hess, Archiv für Naturg., Band xxxi., p. 159, pl. vii., fig. 15 (1865).

Body covered above with very short close down. Hands as broad as the carapace, carpus as large as the arm, nearly quadrilateral.

Tasmania.

Section ANOMOURA INFERIORA.

Eyes anterior to the first pair of antennæ. Second pair of antennæ posterior and external to the eyes. Abdomen elongate, scarcely inflexed, with caudal, and often ventral appendages.

Sub-Tribe Paguridea.

Carapace more or less elongated, and of softer consistency behind. Eyes pedunculate, not retractile, and directed forwards. External maxillipedes pediform. Abdomen usually soft, unsymmetrical, with unequal appendages. Anterior legs with a well-developed hand. Fourth and fifth pairs of ambulatory legs short, raised above the rest, and usually didactyle.

Genus Eupagurus, Brandt.

Front acute in the middle. Ophthalmic segment exposed, without a mobile scale. Eye-peduncles of moderate size.

External antennæ with a long flagellum, the basal scale slender. External maxillipedes rather large, distant from one another at the base. Anterior legs unequal, the right the largest, fingers not spoon-excavate at the tips. Fourth pair of ambulatory legs scarcely subchelate. Abdomen unsymmetrical, soft, without calcareous plates.

288. Eupagurus sinuatus.

Eupagurus sinuatus, Stimpson, Proc. Acad. Nat. Sci. Philad., Vol. x., sp. 348.

Rostriform tooth acute, prominent. Eyes thick, shorter than the aciculum, the corneæ a little dilated, apices of the squamules elongated. Right chelipede not longer than the ambulatory legs, short-pubescent, granulated; carpus sub-triangular, the internal margin spinose, the surface with a smooth median line; hand broad, armed with median and marginal series of spines in the female, finger armed above with a median row of acute tubercles. Left chelipede sub-trigonal, hirsute, and granulated, the upper margin of the carpus spinose, hand not spinulose, with a sub-median obtuse carina. Merus of the chelipedes profoundly excavated below, the margins provided with long cilia, the external margin spinose. Feet of the second and third pairs hirsute above, not spinulose, dactyli rather broad, not twisted, armed with horny spinules. [*Stimps.*]

Port Jackson.

289. Eupagurus acantholepis.

Eupagurus acantholepis, Stimpson, l. c., sp. 350.

Rostriform tooth obsolete. Ophthalmic segment exposed, provided with a sub-bifurcate squamule. Eyes slender, extending beyond the peduncles of the antennæ, not shorter than the breadth of the front, curved outwards, the corneæ not dilated; squamules rather small, bidentate at the apex. Aciculum small. Feet slender, clothed with scattered long hairs. Chelipedes spinulose above (the right the larger), hands a little depressed, spinules triserial; carpi a little canaliculated above. Second and third pairs of legs longer than the chelipedes; dactyli not contorted, compressed, almost falciform, with slender points

abdomen provided with a conical process, with a corneous apex on the right side of the base below. Length 1 in. [*Stimps.*]

Port Jackson.

290. **Eupagurus frontalis.**

Pagurus frontalis, Milne-Edwards, Ann. des Sci. Nat. (2e série), t. vi., p. 283, pl. xiii., fig. 3; Hist. Nat. Crust., t. ii., p. 234 (1837).

Rostriform tooth large, triangular, and rather prominent. Front deeply excavated on each side of this tooth, and strongly grooved near its border. Ocular peduncles cylindrical, of the length of the anterior border of the carapace, and passing much beyond the third joint of the internal antennæ; squamiform teeth at their base small, dilated, pointed, and closely approximated. Anterior legs unequal, swollen, very finely granulated and a little spinose above. Second and third pairs of legs smooth, having on their upper border and on the tarsus a few black spiniform points. Fourth pair of legs scarcely subcheliform; last pair extremely short. Length about four inches. Colour reddish, livid; a few yellowish hairs on the hand and the sides of the carapace. [*M.-E.*]

Australia.

291. **Eupagurus setifer.**

Pagurus setifer, M.-Edw., Hist. Nat. Crust., t. ii., p. 225.

Ocular peduncles moderate, much shorter than the anterior border of the carapace, but passing beyond the peduncle of the internal antennæ; cornea small, and only occupying about the fifth of the length of the peduncle. Spiniform palp of the external antennæ very small. Anterior portion of the carapace much depressed, polished, and marked with several linear grooves of which the median circumscribe a kind of cushion. Anterior legs small (the left a little stouter than the right), hairy, and a little spinose on the upper border. Two following pairs of legs short, thick, cylindrical, and scarcely spinose except at the external border of their third joint. Left leg of the third pair with three longitudinal crests separated by deep grooves, the two external crests marginal and setiferous. Legs covered with

a large quantity of long yellow hairs. Colour red mixed with yellow. [*M.-E.*]

Port Jackson.

Genus PAGURUS, M.-Edw.

Front straight in the middle. Ophthalmic segment exposed, with a mobile scale. Eye peduncles stout, and usually constricted in the middle, with the basal scale short. External maxillipedes approximated at the base. Anterior legs unequal, the left the largest, fingers opening vertically, with corneous tips, more or less spoon-excavate. Ambulatory legs with the coxæ approximated at the base, the fourth pair chelate. Abdomen soft, unsymmetrical, of the male without genital appendages.

292. Pagurus punctulatus. A.M.

Pagurus punctulatus, Milne-Edwards, Hist. Nat. Crust., ii., p. 222.

Ocular peduncles thick, cylindrical, and rather long, but passing very little beyond the peduncle of the external antennæ, shorter than the peduncle of the internal antennæ, and much shorter than the anterior border of the carapace; cornea small, not occupying quarter of the length of the peduncle. Spiniform palpi of the external antennæ small. Anterior legs dilated, very unequal (the left very thick), and covered with strong pointed spines ornamented at their base with bundles of long stiff hairs. Second pair of legs nearly cylindrical, and ornamented with a multitude of stiff hairs, at the base of each of which are two pointed spines. Abdomen with four broad transverse plates, and with four appendages, which in the male are simple and very small, and in the female (with the exception of the last) stout and provided with three well-developed rami. General colour, orange red with ocellated white spots, bordered with brown or black. [*M.-E.*]

Australia. Occurs also widely distributed in the Red Sea, Indian and Pacific Oceans.

293. Pagurus pedunculatus.

Cancer pedunculatus, Herbst.

Pagurus pedunculatus, Miers, Ann. Mag. Nat. Hist. (5), v., p. 374 (1880).

Allied to *P. deformis*, but distinguished by the hand of the larger chelipede being somewhat more closely granulated between the larger tubercles, which, as in *P. deformis*, are disposed in longitudinal series on the upper and outer surface of the palm; the mobile finger is granulated but not carinated on its upper and outer surface, the granules being disposed in longitudinal series; the penultimate joint of the third left leg is smooth, not carinated as in *P. deformis;* the terminal joint, however, is nearly of the same form as in that species. [*Miers.*]

Port Jackson. The above is Miers' description of the specimens in the British Museum collection referred to *P. pedunculatus* by White.

294. **Pagurus minutus.**

Pagurus minutus, Hess, Archiv für Nat., xxxi., p. 160 (1865).

Anterior portion of the carapace oval. Lateral borders convex, smooth. Appendages of the external antennæ not reaching the length of the peduncles of the eyes, but reaching beyond the peduncle of the antennæ. Legs long, sparingly clothed with bristles, chelipedes beset with tubercles arranged in several straight lines on the hand. Fingers small, not toothed. Colour dull grey. [*Hess.*]

Sydney (Göttingen Museum).

Genus DIOGENES, Dana.

Ophthalmic segment rostrate. Fourth pair of legs subcheliform. Left chelipede the larger; fingers acuminate, calcareous at the tips.

295. **Diogenes miles.**

Cancer miles, Fabr., Ent. Syst., ii., p. 470.

Cancer Diogenes, Herbst, ii, 17, pl. xxii., fig. 5.

Pagurus miles, Fabr., Supp., p. 412; M.-Edw., Hist. Nat. Crust., ii., p. 235; Ann. des Sci. Nat. (2e série), vi., p. 284, pl. xiv., fig. 2.

Diogenes miles, Dana, U.S. Explor. Exped., Crust., Vol. i., p. 439.

Ocular peduncles moderate, not extending much beyond the penultimate joint of the antennæ; the basal scales broad, flat, and applied against the rostriform prolongation. Anterior legs very unequal; that of the left side very strong, and all covered above with more or less pointed spines. Following pairs of legs granular and spinose above; their tarsus very long, with a trenchant border, grooved externally, and armed below with spines. Abdomen of the male having four rather large appendages, terminated by a long simple lamella. Colour yellowish.

New South Wales (Dana); also on the coasts of India, and in the Sooloo Archipelago.

296. Diogenes custos.

Pagurus custos, Fabr., Supp., 412, Milne-Edwards, Hist. Nat. Crust., t. ii., p. 236.

Diogenes custos, Dana, U.S. Explor. Exped., Crust., i., p. 440, pl. xxvii., fig. 10; Stimpson, Proc. Acad. Nat. Sci. Philad., Vol. x., sp. 312.

Posterior region of the carapace pilose; anterior region with a few hairs in tufts, and surface a little uneven. Ophthalmic rostriform appendage sparingly dentate, and not as narrow as in the *miles*. Outer antennæ having the flagellum fringed below the acicle, hardly prolonged into a process on the inner side, and its outer process not reaching beyond the apex of the joint following it. Large hand finely granulated above, and not armed with spines on its upper border. Tarsus of the two following pairs of legs without spines. Otherwise like *D. miles*,

New South Wales (Dana); Sydney (Stimpson).

297. Diogenes granulatus.

Diogenes granulatus, Miers, Ann. Mag. Nat. Hist., v., (5), p. 373 (foot-note), 1880.

Rostrum short, acute, non-spinulous, not projecting beyond the level of the ophthalmic scales, which are sub-triangulate and entire; the arm and wrist of the larger (left) chelipede robust and coarsely granulated on their upper and external surface, the hand somewhat less coarsely granulated, except on the upper margins, very convex on its outer surface, particularly near its articulation with the wrist; lower (immobile) finger bent down-

ward, and forming an obtuse angle with the lower margin of the palm. Dactyli of the second and third legs on the left-hand side rather short, scarcely exceeding the penultimate joint in length; on the right hand side they are relatively longer and curved. [*Miers.*]

Shark's Bay (Brit. Museum).

298. **Diogenes senex.**

Diogenes senex, Heller, Reise der Novara, Crust., p. 85, pl. vii., fig. 3.

Carapace a little hirsute above; front rounded in the middle; lateral teeth acute, little prominent. Rostrum mobile, very acute, spiniform, reaching the apex of the ophthalmic squamules. Eyes reaching a little beyond the peduncle of the antennæ, ophthalmic squamules broad, sub-arcuate externally, the apex armed with 2–3 spinules. Chelipedes unequal, the left much the larger, carpus and palm acutely granulated, denticulate at the upper margin, the palm a little broader than the carpus, with a rough longitudinal ridge in the middle of the outer surface, fingers short, hand and fingers clothed with long hairs. Right chelipede short, also pilose. Ambulatory legs slender, hirsute, the dactylus a little longer than the propodos. [*Heller.*]

Sydney.

Genus CALCINUS, Dana.

Anterior feet unequal, the left larger. Fingers moving in a vertical plane, calcareous at the tips, spoon-excavate. Front with a small point as a rostrum.

299. **Calcinus terræ-reginæ.** A.M.

Calcinus terræ-reginæ, Haswell, l. c.

Surface of carapace and limbs ornamented with scattered punctations. Eyes slender, longer than the front of the carapace; basal scale slender. Left chelipede somewhat swollen, smooth; hand with a row of small granules below; fingers widely gaping, obscurely toothed internally. Right chelipede with the carpus and hand compressed, slightly granulate externally, and with a few scattered hairs; hand strongly cristate above, the crest divided into five strong teeth; mobile finger with three or four

small teeth above. Carpus of the second and third legs with a minute acute spine at the distal end of its upper border. Ambulatory legs with a few scattered fasciculi of hairs. In specimens preserved in spirits the chelipedes (with the exception of the fingers and the carpus of the ambulatory legs) are green; the fingers are colourless; the propodos of the ambulatory legs is light dull red; the basal portion of the dactylus dark purple, the distal portion light yellow with a black tip. The rest of the surface is washed with light brown and olive. Length about one inch.

Claremont Islands, Queensland coast, on coral reef (W.A.H., H.M.S. "*Alert*.")

Genus CLIBANARIAS, Dana.

Anterior feet sub-equal. Fingers moving in a horizontal plane, corneous at tips, spoon-excavate. Front having a small mesial tooth as a rostrum. [*D.*]

300. **Clibanarius striolatus.** A.M.

Clibanarius striolatus, Dana, U.S. Explor. Exped., Crust., i., p. 463.

Anterior region of the carapace nearly quadrate. Eyes slender, about as long as the anterior margin of the carapace, basal scale narrow, bidentate at apex. Anterior feet sub-equal. Hands short and, with the carpus, spinituberculate above and pilose, the left in the male slightly the larger. Feet of second and third pairs short hirsute in tufts on the upper and lower sides, tarsus subterete, as long as the preceding joint, fifth joint, left side, of third pair slightly convex and having a right-angled edge above. [*D.*]

A specimen of a *Clibanarius* from Holborn Island, Port Denison, Queensland, agrees tolerably well with Dana's description and figure of *C. striolatus*, but the spines on the hand and carpus are longer, and the ophthalmic scale has not quite the shape represented in the figure.

Family CENOBITIDÆ.

Internal antennæ greatly elongated, the first joint often longer than the eyes, strongly deflexed. Palp of the external maxillipedes without a flagellum.

Genus CENOBITA, Milne-Edwards.

Body narrow; carapace elongate; front not rostrate. Abdomen spirally coiled; its surface for the most part fleshy.

301. Cenobita rugosa.

Cenobita rugosa, M.-Edw., Hist. Nat. Crust., ii., p. 241; Dana, U.S. Explor. Exped., Crust., i., p. 471; Heller, Reise der Novara, Crust., p. 82.

Cenobita clypeata, Owen, Crust. "Blossom," p. 85, pl. XXV., fig. 3.

Gastric region nearly flat; labial border of the branchial regions very prominent and slightly curved. Ocular peduncles much compressed, about twice as long as high, their basal scale moderate and pointed. Legs granular and slightly muricate. Large hand moderate, ornamented above with a row of small oblique and parallel crests. Tarsi short and triangular. Superior and external border of the two last joints of the third left leg raised into an obtuse crest.

Sydney. Occurs also in the Indian Ocean, and at Tahiti.

302. Cenobita Olivieri.

Pagurus clypeatus, Olivier, Encycl., viii., p. 643, pl. 311, fig. 1.

Cenobita Olivieri, Owen. Crust. "Blossom," p. 84; Dana, U.S. Explor. Exped., Crust., i., p. 470.

Surface of carapace with absolescent granuliform tubercles, but nearly smooth. Peduncles of eyes rough, granulous above, very much compressed, height more than half the length; triangular, vertically oblong. The superior of the flagella of the inner antennæ about double the length of the inferior. Large hand with short and small but spiniform tubercles, which are obsolescent below and crowded above, especially on the moveable finger. A dense tuft of short hair along the upper margin of both hands. Inner surface of hands flat or even excavate in the upper half. Tarsi short, but very little longer than the preceding joint, and very stout, with short spiniform tubercles having black corneous tips, and rest of legs similar in surface except that the points are less crowded. A short pubescence on some of the legs. [*Dana.*]

N. W. Coast of Australia (Capt. Wolcott, R.N.). Found previously in the Paumotu Archipelago, at Clermont Tonnerre, Waterland Islands, and Tahiti.

303. Cenobita brunnea.

Cenobita brunnea, Dana, U.S. Explor. Exped., Crust., i., p. 470, pl. xxix., fig. 10.

Birgus hirsutus, Hess, Archiv für Naturg., Vol. xxxi., p. 162, pl. vii., fig. 16.

Anterior region of the carapace convex, naked, smooth. Eyes hardly shorter than the front, smooth. Feet armed with short conical spines having corneous tips; anterior pair sub-equal, hands sparsely hirsute, upper margin of hands dense pilose, carpus of left leg having upper surface gibbous. Second and third pairs lax and sparsely hirsute, tarsus subterete, very long (longer than the fifth joint), spinules of outer surface imperfectly seriate.

Sydney? (Hess). Found originally at Upolu.

Sub-Tribe GALATHEIDEA.

Carapace elongated, of hard, crustaceous consistency, and with a deep groove above, partly defining the gastric region. Internal antennæ short, external antennæ elongated. External maxillipedes pediform. Sternum wider behind. Abdomen elongated, rounded above, of crustaceous texture, with elongated appendages beneath, and terminal appendages fan-shaped and expanded as in the *Macroura*. Anterior legs large, perfectly chelate. Three following pairs with styliform tarsi; fifth pair weak, inflexed.

Genus GALATHEA, Fabr.

Front unicuspidate. Basal joint of the internal antennæ cylindrical. External maxillipedes of moderate length, the terminal joints not expanded.

304. Galathea australiensis. A.M.

Galathea australiensis, Stimpson, Proc. Acad. Nat. Sci. Phil., Vol. x., sp. 351.

Carapace broad behind, strigose, the ridges with rather long cilia, the gastric region moderately circumscribed, armed with

two spinules in front. Lateral margin eight-spined, including the spines above and below the antennæ. Rostrum broad, triangular, the surface densely pubescent, the margin with four teeth on either side, the teeth long, acute, spiniform. Chelipedes rather stout, bordered with a few spines, the fingers depressed, not gaping, 1–2 dentate. [*Stimps.*]

Port Jackson; Port Stephens.

This is a very near ally of Dana's *G. spinosirostris*, and may prove to be identical with that species.

305. Galathea corallicola.

Galathea corallicola, Haswell, P. L. S., N.S.W., Vol. vi.

Nearly allied to the preceding; distinguished from it by the absence of the spines on the gastric region, by having the frontal region rather narrow, the eyes longer, and the hands both longer and broader and with very few spines. In some specimens the hands are broader than in others, and the fingers gape widely. Length about ½ in.

Port Molle, Queensland, under blocks of dead coral between tide marks. (W. A. H.)

306. Galathea magnifica.

Galathea magnifica, Haswell, l. c.

Carapace and rostrum nearly as in *G. corallicola*, but the latter relatively shorter. Eyes more prominent than in *G. corallicola*, but not so thick. Chelipedes very small, about ⅔ of the length of the body, slender; fingers not gaping. Length ½ in. Colour bright red, with a brilliant purple stripe down the centre of the carapace; legs ornamented with transverse bands of darker red and purple; fingers dark reddish brown, yellow at the tips.

A number of specimens of this remarkable species were obtained with the dredge in a depth of about 25 fathoms off Broughton's Islands, near Port Stephens.

307. Galathea aculeata.

Galathea aculeata, Haswell, l. c.

Allied to *G. corallicola* in the form of the carapace and rostrum, but with the central spine of the latter very long, pro-

jecting far beyond the others. Chelipedes longer than the body, with few spines, the propodos short and narrow, the fingers not gaping. Length ½ in.

Holborn Island, 20 fathoms; Port Molle, 14 fathoms (W.A.H., H.M.S. "*Alert*").

308. **Galathea elegans.** ?

? *Galathea elegans*, Adams and White, Zoology of the "Samarang," Crustacea, pl. xii., fig. 7.

Rostrum very long, more than half the length of the rest of the carapace, triangular, nearly entire, with seven small denticulations on each side. Lateral borders of the carapace with about a dozen sharp spinous teeth. Chelipedes very long, twice as long as the carapace and rostrum, slender, with few spines; fingers not gaping, not half the length of the hand. Colour yellowish, with three narrow longitudinal dark purple bands on the body, and one on either side of the chelipedes and ambulatory legs. Length ⅝ in.

Holborn Island, 20 fathoms.

The chelipedes in the single specimen are very much longer and more slender than in the figure in the Voyage of the "Samarang."

309. **Galathea deflexifrons.**

Galathea deflexifrons, Haswell, l. c.

Closely allied to the preceding, distinguished from it only by having the rostrum distinctly deflexed, and the denticles on its borders almost obsolete. Colour dark purple.

Albany Passage, among *Comatulids* (W. A. H., H. M. S. "*Alert*").

Tribe MACROURA.

Abdomen elongate, extended backward, with lamellar appendages beneath. Appendages to the penultimate segment large, laterally expanded, and constituting, with the terminal segment, a fan-like swimming apparatus. Sternum usually linear throughout its length. Antennæ very greatly developed, inner without fossettes. External maxillipedes nearly always pediform. Buccal cavity not distinctly defined in front.

Sub-Tribe THALASSINIDEA.

Carapace usually deep and laterally compressed, with two longitudinal and usually a dorsal suture. Scale of the external antennæ small or obsolete. Anterior legs largely developed, usually laterally compressed and adapted to burrowing. The integument of the body almost membranaceous in texture.

Family I. GEBIIDÆ.

External maxillipedes pediform. Caudal and other abdominal appendages broad.

Genus GEBIA, Leach.

Carapace with a short triangular rostrum. Internal antennæ very short; external antennæ slender, without any basal scale. External maxillipedes pediform. Anterior legs with the hand elongate, compressed, imperfectly sub-chelate, the upper mobile finger closing against a rudimentary inferior immobile finger. Ambulatory legs monodactyle, first pair somewhat expanded and compressed, tarsus styliform. Abdomen long, and expanded posteriorly, without branchial appendages; caudal appendages broad.

310. Gebia hirtifrons.

Gebia hirtifrons, White, Proc. Zool. Soc., p. 122 (1847); List Crust. Brit. Mus., p. 71 (1847); Ann. and Mag. Nat. Hist. (2), Vol. i., p. 225 (1848); E. J. Miers, Zool. "Erebus and Terror," Crust., p. 4, pl. iii., fig. 5; nec Dana; Kirk, Trans. N.Z. Institute, xi., p. 401 (1879).

Front triangular; anterior portion of carapace with six or seven longitudinal rows of small tubercles, furnished at the tip with tufts of hairs. Hand slender, hairy on its outer surface, and not denticulated below, the immobile finger quite rudimentary. Wrist with a spine at its upper apex, and one on the inner surface, but none at the lower apex.

Port Jackson, in the interior of sponges.

The above description—from the brief and unsatisfactory diagnosis of White, and from a note by Mr. Miers in the Catalogue of the New Zealand Crustacea, descriptive of the type specimen of the species in the British Museum—applies

very well to the species of *Gebia* commonly found as a tenant of various sponges in Port Jackson. In the female the minute spines on the wrist are rudimentary or absent.

311. **Gebia spinifrons.** Plate iii, fig. 5.

Gebia spinifrons, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Front divided into three parts by two deep lateral longitudinal grooves, which extend on the upper surface of the carapace, becoming shallower posteriorly and bending slightly outwards; the mesial portion of the front much more prominent than the lateral portions, and forming a triangular rostrum with a narrow mesial longitudinal groove above; lateral portions each with two small acute teeth below near their extremity; cephalic region of the carapace marked with numerous transverse scabrous lines beset with hairs; anterior border, below the lateral frontal process, and behind the base of the antennæ, with three prominent acute spines; two others on the outer portion of the antennary sternum, three smaller close together in a longitudinal row, on the hepatic region parallel with and close below the lateral border, and a row of 2–10 others bordering the lateral portions of the cervical groove behind. First three pairs of legs having the merus armed below with a variable number of acute spines; first pair also armed with a row of spines on the upper border of the propodos and carpus, and a single spine on the upper border of the merus near the distal extremity; second pair with a single spine on the upper border of the carpus, and two near the distal end of the upper border of the merus. Length 3 in.

Port Stephens, eight fathoms.

Genus Axius, Leach.

Hands broad, the immobile finger well-developed. Second pair of legs smaller than the first, sublamellate, didactylous; third, fourth, and fifth monodactyle. Rostrum simple, triangulate. External antennæ with a small basal squame.

312. **Axius glyptocercus.**

Axius glyptocercus, E. von Martens, Monatsber. Akad. Wiss. Berlin, 1868, p. 613.

Rostrum reaching the second joint of the peduncle of the external antennæ, emarginate at the apex, with six teeth on either side, and beset with fasciculi of hairs between; a longitudinal line in the middle, which, however, does not reach to the apex. Anterior border of the carapace beset with two large teeth above the insertion of the external antennæ, and two small ones below. Gastric region wrinkled. First, third, fourth, and fifth abdominal segments always with two, the second with ten teeth on the lateral borders; third, fourth, and fifth with a fringe of hairs on the hinder half of the lateral borders. Telson with an elevated transverse ridge which developes into a small point. Both the internal and the external rami of the sixth pair of abdominal appendages with two keels on the internal ramus, one of these is on the outer border and without spine, the other has four spines, and between the two are three more spines; on the external ramus both keels are curved and without spines, the outer the stronger, and the external border armed with sixteen strong teeth. [*E. von M.*]

Cape York (Dämel).

Family THALASSINIDÆ.

Abdomen and caudal appendages narrow. External maxillipedes pediform.

Genus THALASSINA, Latreille.

Carapace short, narrow, and much elevated; gastric region small and limited behind by a deep groove; front with a small triangular rostrum. External maxillipedes of moderate length, pediform, the second joint armed with spiniform teeth on its internal face. First pair of legs narrow and moderately elongated, but tolerably stout, very unequal; hand with a tooth at its infero-distal angle forming a tooth-like immobile finger; mobile finger very large; legs of the second pair much compressed and rather broad. Abdomen very long, narrow, semi-cylindrical, and nearly of the same thickness in all its extent. Telson small, rami of the appendages of the sixth abdominal segment almost linear.

313. Thalassina maxima.

Thalassina maxima, Hess, Archiv für Natur., xxxi., p. 163, pl. vii., fig. 18 (1865).

Carapace strongly compressed, becoming rather narrower in front. A strong horizontal tooth in the middle of the hinder border of the carapace. Branchial regions strongly granulated at the front border and on the surface. Rostrum rather thick, eyes prominent, with a row of impressed points on either side, in which hairs are inserted. At some distance from the rostrum on either side is a raised longitudinal line which ends in front in a tooth. Hepatic region roughly granulated. Legs strongly toothed, claws and tarsi thickly fringed with hairs. Arm with a long bent very acute tooth at its apex. Carpus with a row of thick teeth above. Hand large, with two longitudinal raised lines on its upper border. Immobile finger very small, mobile finger larger with a deep longitudinal groove on either side. [*Hess.*]

Sydney (Hess).

314. Thalassina sp.

The burrows of *Thalassinæ* are abundant among the mangroves all along the coast of Queensland. There are only some fragments of one of these in the Australian Museum collection—sufficient, however, to shew that the species is distinct from both *T. scorpionoides* and *T. maxima.*

Port Curtis.

Family CALLIANASSIDÆ.

Caudal appendages broad. External maxillipedes operculiform.

Genus Callianassa, Leach.

Carapace very small. A small rostral spine. External maxillipedes sometimes pediform, sometimes expanded and operculiform. Second pair of legs slender, terminating in small chelæ. Third pair terminating in a very small dactylus; the propodos expanded. Appendages of the sixth abdominal segment sometimes with both rami expanded, sometimes with the inner ramus lancet-shaped and the outer expanded.

315. Callianassa, sp.

I found a specimen of a species of *Callianassa* inhabiting a hole among broken pieces of coral on Molle Island, Whitsunday

Passage (Queensland); unfortunately the abdomen has been lost; but it appears to be an undescribed species allied to *C. longimana*, Stimpson.

Sub-Tribe Astacidea.

Carapace often marked by a transverse dorsal (cervical) suture; the longitudinal sutures obsolete. Scaphocerite present, well-developed or small, or obsolete. First pair of legs (chelipedes) either didactyle or monodactyle. Branchiæ penicillate.

Family SCYLLARIDÆ.

Carapace much depressed, the lateral margins rather thin, carapace suddenly inflexed laterally. External antennæ laminate, short, without a basal scale or scaphocerite. Sternum trigonous. Anterior legs monodactyle.

Genus Ibacus, Leach.

Carapace transverse, the sides incised. Rostrum bilobate. Eyes far removed from the external angles. External antennæ not far removed from one another. Branchiæ 21.

316. Ibacus Peronii. A.M.

Ibacus Peronii, Leach. Zool. Misc., t. ii., pl. 119; Desmarest, Consid., p. 183, pl. xxxi., fig. 2; Milne-Edwards, Hist. Nat. Crust., t. ii., p. 287.

Orbits situated much nearer the middle line than the external angles of the carapace, which are recurved in front and extend further forward than the front. Carapace much depressed, granulated, and presenting three longitudinal crests, of which the median is ornamented with a few smooth tubercles, and the lateral are situated on the same longitudinal line as the orbits; lateral borders of the carapace very oblique and armed with seven teeth, of which only one is situated in front of the great lateral incision, and forms the anterior angle. External antennæ much broader than long, their first joint very small and scarcely extending beyond the rostrum, the second feebly toothed, and the fourth armed only with three or four very broad and not very prominent teeth. External maxillipedes armed with spines

on the outer border of the fourth joint. Abdomen punctate and surmounted with a median obtuse crest. Length about 5 in.

Sydney, etc.

317. Ibacus antarcticus. A.M.

Ibacus antarcticus, Rumph. Mus.; Milne-Edwards, Hist. Nat. Crust., t. ii., p. 287; Dana, U.S. Explor. Exped., Crust. i., p. 517.

Orbits situated nearer the angle of the carapace than the middle line. Carapace convex, scarcely narrowing behind, covered with coarse squamiform tubercles, each of which is bordered with a fringe of hairs. Two teeth in front of the large lateral incision of the carapace. External antennæ much longer than broad, their first joint very large and much more prominent than the rostrum, the second armed with ten strong pointed teeth, seven of which are situated on the external border, two between the anterior angle and the articulation of the third joint, and one on the internal border; lastly the fourth joint is armed on the border with seven strong, triangular, very prominent teeth. No spines on the external border of the external maxillipedes. Abdomen tuberculate and hairy like the carapace.

Australia. Widely distributed through Eastern Seas.

Genus Arctus, Dana.

Rostrum very short, truncate. External antennæ remote from one another. Palp of the external maxillipedes without a flagellum. Branchiæ 19. [*D.*]

318. Arctus ursus.

Cancer ursus minor, Herbst, t. ii., p. 83, pl. xxx.

Cancer arctus, Roemer, Gen. Insect., pl. xxxii., fig. 3.

Scyllarus arctus, Fabr., Supp., p. 399; Latr., Encycl., pl. 287, fig. 5; Lam., Hist. des Ani. s. Vert., t. v., p. 212; Desmarest, Consid., p. 182; Risso, Crust. de Nice, p. 61; Milne-Edwards, Règne Animal de Cuvier, 3e éd., Crust., pl. 45, fig. 1; Hist. Nat. des Crust., t. ii., p. 282; De Haan, Fauna Japonica, Crust., p. 154, pl. xxxviii., fig. 2.

Arctus ursus, Dana, U.S. Explor. Exped., Crust., i., p 516.

Carapace ornamented with squamiform tubercles, and armed on the median line with a series of spines, of which the three longest occupy the gastric region; an oblique crest, which arises from the internal orbital angle, reaches the branchial region, and bears three strong spines, of which two are situated above the orbit. External antennæ large and strongly toothed, their antepenultimate joint nearly triangular, armed with two strong teeth on its external border, and ornamented above with a crest which is directed obliquely and terminates at the anterior angle; the last joint armed with six strong teeth on the anterior border. Abdomen sculptured above, and presenting on the posterior border of each segment a rather deep median excavation. Legs slender. Length about 3 in.; colour brown, with transverse red lines on the abdomen.

Thursday Island, Torres Straits (W.A.H., H.M.S. "*Alert*"). Occurs in the Mediterranean, and on the coasts of Japan.

Genus THENUS, Leach.

Carapace transverse; sides not incised. Eyes oblong, situated at the external angles of the carapace. Rostrum bilobate. Branchiæ 21.

319. Thenus orientalis.

Scyllarus orientalis, Fabr., Suppl., p. 399; Latr., Hist. Nat. Crust., t. vi., p. 181; Encycl., pl. 314; Desmarest, Consid., p. 182, pl. xxxi., fig. 1.

Thenus orientalis, M.-Edw., Hist. Nat. Crust., t. ii., p. 286.

Carapace much depressed and verrucose; a small obtuse crest ornamented with three teeth on the middle line; rostrum armed with two thick divergent cornua. A spine at the internal angle of the orbit, two on its upper border, and one at its posterior angle; another tooth on the upper surface of the carapace a little behind the orbit, and a deep fissure on the external border. A strong spine in the middle of the posterior border of the tergum of the fifth ring of the abdomen.

Swan River (Dana). Found also in the Indian Ocean.

Family PALINURIDÆ.

Carapace sub-cylindrical, broadly rounded laterally. External antennæ without a basal scale, the basal joints long, sub-cylindrical. Anterior legs monodactyle. Sternum trigonous.

Genus PALINURUS, Fabr.

Carapace with a small rostrum. Antennary segment very narrow above. External antennæ nearly in contact with one another at their base, and concealing the bases of the internal antennæ, the flagella of which are very short.

320. Palinurus Edwardsii.

Palinurus Edwardsii, Hutton, Trans. N.Z. Inst., p. 279 (1875); Miers, Cat. Crust. N.Z., p. 75 (1876).

Carapace beaked, armed with spines and large oval depressed tubercles, separated by rows of short hairs. Beak small, compressed, curved upwards, and with two very small spines at its base. Spines on each side of the beak compressed and smooth. Abdomen transversely sulcated and covered with flat tubercles, each segment with a row of short hairs on its posterior margin. A single tooth on the posterior margin of the lateral lobes of the abdominal segments. Anterior legs with a strong spine on the inferior margin of the second and third joints, none on the penultimate joint. The superior margin of the distal extremity of the fourth joint of the last four pairs of legs armed with two spines, a smaller one in front of the larger. Colour dark brownish purple; marbled with yellow on the abdomen. Legs and caudal appendages reddish orange, more or less marbled with purple. The female has a spine on the inferior margin of the distal extremity of the penultimate joint of the last pair of legs. Length 9½ in. [*H.*]

Tasmania. Found also at St. Paul, and in New Zealand.

321. Palinurus ornatus.

Palinurus ornatus, Fabr., Supp., p. 400; Latr., Encycl., pl. 316; Lam., Hist. des An. s. Vert., t. v., p. 210; Desmarest, Cons., p. 185.

Antennulary segment armed above with four spines in a square with two other rudimentary spines between them. Carapace

very spinose, not tuberculated, but without median spines near the base of the frontal cornua, and having laterally only very small teeth on its anterior border. Abdomen smooth, finely punctate and without transverse grooves; several small teeth at the posterior part of the base of the lateral processes of the second, third, fourth, and fifth abdominal segments. Colour green, with small irregular whitish spots on the thorax, marblings on the abdomen, and alternate rings of green and yellow on the legs. Length 15 to 18 in. [*M.-Edw.*]

Northern parts of the Australian Coast. Found also in the Samoa Islands, the Isle of France, and the "Seas of India."

322. **Palinurus penicillatus.**

Astacus penicillatus, Olivier, Encycl., t. vi., p. 343.

Palinurus penicillatus, Olivier, Encycl., t. vii., p. 674; Desmarest, Consid., p. 186; Milne-Edwards, Hist. Nat. des Crust., t. ii., p. 186.

Antennulary segment armed with four conical, very thick teeth, divergent and united at their base. Carapace very spinous, and ornamented with a large number of piliferous tubercles, a few median spines on the gastric region. Peduncles of the external antennæ scarcely spinose below. Abdomen punctate, the lateral processes with a single tooth behind at the base; a transverse piliferous groove towards the middle of each segment. Colour greenish, passing into reddish-brown here and there, and spotted with yellow; the yellow spots of the abdomen small, extremely numerous, and close together; those of the legs forming longitudinal bands. [*M.-E.*]

Northern portions of the Australian coast. Found also in the Indian Ocean.

323. **Palinurus Hügelii.** A.M.

Palinurus Hügelii, Heller, Reise der Novara, Crust., p. 96, pl. viii.

? Palinurus tumidus Kirk, Trans. N.Z. Inst., Vol. xii., p. 314 (1879).

Carapace a little narrowed anteriorly, convex and spinose above, the spines prominent, acute, and directed forwards and upwards. Rostrum acute, spiniform, directed almost straight

forwards; the lateral cornua a little smaller, smooth above and below; anterior margin of the carapace near the orbit with a single spine. Spaces between the spines smooth. Carapace with a deep transverse sulcus in front of the posterior margin. Abdomen punctate; covered with scattered miliary granules, not sulcate in the middle, the lateral cornua armed behind with several acute teeth. Length 15 in.

New South Wales.

This is the common Sydney Crawfish. Mr. T. W. Kirk has described and figured in the Transactions of the New Zealand Institute for 1879, under the name of *P. tumidus*, a species of rock-lobster obtained in the North Island, and mentions that Dr. Hector had told him that it is the same species as the common crawfish of the Sydney Market. The differences between *P. tumidus* and *P. Hügelii* he states to be, (1) the greater size of the former, (2) the upward curvature of the beak, supra-orbital and antennary spines, (3) the telson in the former being less triangular and rounded instead of scarped. Leaving size out of consideration, the upward (and forward) direction of the spines mentioned is, so far as can be seen, present in *P. Hügelii*, as described and figured by Heller; and there is such a close agreement in all other points between that species and the Sydney crawfish, that I am inclined to regard the concave posterior border of the telson shewn in the figure (but not mentioned in the description), to be either an artist's slip, or the result of the wearing of the posterior thin edge of the telson in the specimen figured.

In young specimens of the Sydney crawfish the spines on the carapace are very prominent, and all without exception pointed as represented in she "Reise der Novara," but in large specimens many of them become blunt, and reduced to the appearance of tubercles, as described by Mr. Kirk in the large New Zealand specimen.

Family ASTACIDÆ.

Carapace oblong, sub-cylindrical, rostrate, scarcely narrower than the abdomen. External antennæ provided with a basal scale. First three pairs of ambulatory legs chelate. Sternum narrow.

Sub-Family Parastacidæ.

Podobranchiæ without or with a rudimentary lamina. First abdominal somite devoid of appendages in either sex. Telson never divided by a transverse hinge.

Genus ASTACOPSIS, Huxley.

Epistome long and flattened. Basal joint of the antennæ fixed by the overlapping edge of the cephalostegite; squame short. Posterior thoracic sterna narrow. Coxopodites of the hinder thoracic limbs large and approximated in the middle line. Rostrum straight. Podobranchiæ not alate.

Section A. Telson and caudal appendages membranaceous with calcareous pieces at the edge.

324. **Astacopsis serratus.**

Cancer serratus, Shaw, Zool. of New Holland, pl. viii.

Astacus armatus, E. von Martens, Ann. Mag. Nat. Hist. (3) Vol. xvii., p. 359.

Astacoides spinifer, Heller, Reise der Novara, Crust., p. 102, pl. ix.

Potamobius serratus, White, P. Z. S., 1850, p. 95, pl. xv.; McCoy, Ann. Mag. Nat. Hist., xx., 1867, p. 189.

Astacoides serratus, E. von Martens, Monatsber, Akad. Wiss. Berlin, 1868, p. 615.

Australian Crayfish, Huxley, "The Crayfish," fig. 76.

Sides of the carapace on the hepatic and branchial regions furnished with scattered conical spines, each enlarged at its base. Rostrum about as long as the peduncles of the outer antennæ, pointed and furnished on each side with four teeth; its borders continued backwards for a short distance on the carapace in the form of a ridge. A spine placed behind the middle of the orbit, continued backwards into a similar shorter ridge. Scales of the outer antennæ pointed. Merus of chelipedes with a row of sharp spines on its inner border, two or three spines on its upper surface, and a row of small irregular teeth on its upper border; carpus with two or three prominent spines on its inner surface, —the first the longest—and one or two on the outer surface. Hand with both borders armed with a row of short spines bent forwards, and forming a double row on the external edge and a

single one on the internal. Following pairs of thoracic limbs with scattered spines. Segments of the abdomen with four to ten large conical acute spines, except the sixth which usually has about a dozen smaller spines. Telson usually with about eighteen small spines, sometimes without spines. Appendages of sixth segment usually armed with about a dozen small spines. Length as much as 20 in.

Murray and its tributaries; creeks at Brisbane Water; Richmond River? Mount Wilson.

This species presents considerable variations in the number and acuteness of the tubercles, and in the length of the rostrum. The specimens from Mount Wilson differ from those from the Murrumbidgee in having the apical spine of the rostrum very short, the tubercles of the carapace blunt, and the tubercles of the abdomen small, the inner row being altogether rudimentary; the colour of this variety is deep red, with bluish shades on the sides of the carapace and legs, as in Shaw's figure.

325. Astacopsis plebejus.

Astacoides plebejus, Hess, Archiv. für Nat., xxxi., p. 164, pl. vii., fig. 17 (1865); Von Martens, l. c., p. 616 (1868).

Carapace almost smooth, with impressed points; the triangular rostrum bent downwards, and ending in an acute apex; at its base on both sides is an elevation. First pair of limbs long and strong, arm long, trigonal, carpus short, with a tooth which is bent forwards on the inner side; hand comparatively large, toothed on the lower lateral border; inner border of mobile finger with a tubercle in the middle, blunt at the end; mobile finger acute, somewhat arched, also with a tubercle in the middle of the inner border. Telson with a tooth in the middle of each side, hairy at the extremity. Rami of the sixth pair of abdominal appendages rather shorter than the telson, also fringed with hairs; the outer with a tooth only on the outer side, the inner with one above in the middle. [*Hess.*]

Sydney (Mus. Göttingen).

326. Astacopsis nobilis.

Astacoides nobilis, Dana, U. S. Explor. Exped., Crust., i., p. 526, pl. xxxiii., fig. 3; Heller, Reise der "Novara," Crust., p. 100; Von Martens, l. c., p. 616.

Rostrum rather long, nearly entire, apex obtuse, and either side having an obtuse tooth, a little shorter than base of outer antennæ. Carapace obsoletely armed on either side below base of beak. Segments of abdomen more or less distinctly uni-tuberculate, the tubercles on younger individuals obsolescent; second segment with short spines near lateral margin; caudal segment a little oblong. Anterior feet equal, stout, carpus very prominently three-spinous. Hand above and below with a prominent margin, which is short dentate, surface nearly smooth, naked. Anterior median process of epistome triangular, very narrow and elongate. Length 5 in. [*Dana.*]

New South Wales?

Probably identical with the following.

327. **Astacopsis Franklinii.**

Astacopsis Franklinii, Gray, l. c., p. 409, pl. iii., fig. 1.

Carapace convex on the sides, rather rugose on the sides behind, the front only slightly produced and edged with a toothed raised margin not reaching beyond the front raised margin of the lower orbit, and with a very short ridge at the middle of each orbit behind; the hands compressed, rather rugose, edge thick and toothed; wrist with four or five conical spines on the inner side, the front the largest; the central caudal lobe broad, continuous, calcareous to the tip; lateral lobes with a very slight central keel; the sides of the second abdominal rings spinose. [*Gray.*]

Tasmania.

Section B. All the laminæ of the tail membranaceous in the hinder half. Abdominal swimmerets not membranaceous.—[Sub-genus *Chæraps*, Erichson.]

328. **Astacopsis quinque-carinatus.**

Astacus quinque-carinatus, Gray, l. c., p. 410, pl. iii., fig. 3.

Chaeraps quinque-carinatus, Von Martens, l. c., p. 616.

Carapace smooth, rather convex, and with three keels above, the beak longly produced, ending in a spine, simple on the side, and produced into a keel on each side behind; the central caudal lobe rather narrow, indistinctly divided in half, and like the other lobes flexile at the end, the lateral lobes with a central keel

ending in a slight spine; the hands elongated, compressed, smooth, with a thickened, toothed inner margin, which is ciliated above; wrist with two conical spines on the inner side. [*Gray.*]

Western Australia.

329. Astacopsis quadricarinatus.

Chæraps quadricarinatus, Von Martens, l. c., p. 617.

No middle keel on the carapace, but two lateral keels on each side, the inner continued into the border of the rostrum. Rostrum as long as the base of the antennæ, with two teeth on either side. Hand slender, more than thrice as long as broad.

Cape York.

330. Astacopsis bicarinatus. A.M.

Astacus bicarinatus, Gray, Eyre's Central Australia, Vol. i., p. 410 (Appendix), pl. iii., fig. 2.

Chæraps bicarinatus, Von Martens, l. c., p. 617.

Carapace smooth, rather flattened, with a keel on each side above in front; the beak longly produced, flattened, three-toothed at the top. Hands rather compressed, smooth, thinner and slightly toothed on the inner edge; wrist triangular, angularly produced in front. Central caudal lobes with two slightly diverging keels continued, and like the others thin and flexible at the end, the inner lateral lobes with two keels, each ending with a spine. [*Gray.*]

Port Essington; Cape York; Manning River, etc. Widely distributed throughout Australia, especially in the north.

331. Astacopsis Preissii.

Chæraps Preissii, Erichson, Archiv. für Nat., 1846, E. von Martens, l. c., p. 617.

Without keel (?) on the cephalothorax. Hand strong, more thickly and coarsely punctate on the outer side. [*E. von M.*]

South-west Australia (Preiss).

Division C. Neither the abdominal swimmerets or the caudal laminæ membranaceous.

332. Astacopsis Tasmanicus.

Astacoides Tasmanicus, Erichson, l. c.; Von Martens, l. c., p. 618.

A lateral keel on the carapace, having the same position as in *A. bicarinatus*. Rostrum without teeth. Carpus with 6–7 small spines on its inner border. Hand rounded on its outer border, finely toothed on its inner.

Tasmania (Schayer).

333. Astacopsis australiensis.

Astacus australiensis, Milne-Edwards, Hist. Nat. des Crust., t. ii., p. 332, pl. xxiv., figs. 1–5; Heller, Reise der Novara, Crust., p. 100.

Carapace entirely smooth. Rostrum shorter than the peduncle of the external antennæ, narrowing gradually from its base, and armed with two small lateral teeth near its point. Hands compressed, smooth, and ornamented with a sharp more or less denticulated crest on their upper border. Two sharp spines on the internal border of the carpus. No spines in front of the gastric region. Epistome very large, triangular and without transverse groove. [*M.-Edw.*]

Australia.

Genus Engæus, Erichson.

The species of this genus are distinguished from those of *Astacopsis* only by having the abdomen small in proportion to the thorax. The rami of the sixth pair of abdominal appendages have each a longitudinal keel. The external antennæ are short.

334. Engæus fossor. A.M.

Engæus fossor, Erichson, l. c., p. 102, Von Martens, l. c., p. 618.

Hand with a toothed ridge on both borders.

Tasmania (Schayer); Australia (Mus. Berlin).

A specimen from Gippsland, in the Sydney Museum, may belong to this species. There are, however, no distinct ridges on the hand, though there are rows of obscure tubercles both above and below.

335. **Engæus cunicularis.**

Engæus cunicularis, Erichson, l. c.; Von Martens, l. c., p. 619.

Hand rounded on the inner border, on the outer weakly toothed.

Tasmania (Schayer).

Sub-Tribe Caridea.

Carapace smooth, without sutures. External antennæ with a large basal scale. The first and second pairs of legs chelate, one pair or both often more or less enlarged; third pair not chelate. Branchiæ phylloid.

Family I. CRANGONIDÆ.

Legs of the first and second pairs very unequal, the first pair with the mobile finger closing against the anterior margin of the palm, the immobile finger more or less rudimentary and spiniform. Second pair of legs with the wrist never annulated. Mandibles simple, usually slender and incurved. Sternum usually triangular, broader at base.

Sub-Family Crangoninæ.

First pair of legs more robust than the second. External maxillipedes pediform.

Genus Rhynchocinetes, M.-Edw.

Carapace of normal shape, rounded above. Rostrum very large, lamellate, compressed and articulated with the front. Eyes prominent, and when retracted downward, received into a cavity in the upper surface of the peduncle of the superior antennæ. Inferior antennæ with a very long and stout flagellum. External maxillipedes pediform, elongate, slender, cylindrical. Abdomen convex and geniculated above as in *Hippolyte*. Anterior legs stout, with a well-formed hand, but with the immobile finger somewhat rudimentary. Second pair more slender, chelate.

336. Rhynchocinetes typus.

Rhynchocinetes typus, M.-Edw., Ann. Sci. Nat. (Ser 2), t. vii., p. 165 (1837); Hist. Nat. Crust., ii., p. 383 (1837); Dana, U.S. Explor. Exped., Crust., i., p. 568, pl. xxxvi., fig. 7 (1852); Miers, Cat. Crust., N.Z., p. 77 (1876).

Carapace with four spines, three upon the front margin, and one in the middle line, behind the median marginal spine. Rostrum very large, laterally compressed, upper margin with two distinct teeth near its base, and seven or eight closely placed teeth at the extremity, lower margin with about twenty large teeth. External maxillipedes often longer than the rostrum, tipped with spines. Anterior legs large, fingers short and rather spoon-excavate, hairy above, wrist with a spine above. Tarsi spinulous below. Length often nearly 4 in. [*M.-E.*]

Australia. Found also on the coasts of Chili and of New Zealand.

337. Rhynchocinetes rugulosus.

Rhynchocinetes rugulosus, Stimpson, Proc. Acad. Nat. Sci: Phil., Vol. xii., sp. 440.

Allied to *R. typus*, but with the surface of the carapace transversely striolate or rugulose, the rugæ more conspicuous and thicker than in *R. typus*. Rostrum tridentate in the anterior portion of the upper margin; with twelve teeth below. Dactyli of the first pair of feet naked above. Length 2 in.

Port Jackson.

Genus CRANGON, Fabr.

Carapace rather depressed, with the rostrum rudimentary. Eyes short, thick, and free. Internal antennæ dilated at the base, at the outer side of which is a rather large scale; their peduncle short; two multi-articulate flagella. Mandibles slender, without palp. First pair of legs strong, with a flattened hand, the inner and distal angle of which is tooth-like, forming the rudiment of a mobile finger. Following two pairs of legs extremely slender, the second usually terminating in very slender didactyle chelæ, and the third monodactyle. Remaining two pairs of legs monodactyle, but stouter than the second and third.

338. **Crangon intermedius.**

Crangon intermedius, Spence Bate, P. Z. S., 1863, p. 503, pl. xli., fig. 6.

Carapace armed with three teeth on the antero-branchial surface on each side, and a row of minute denticles extending from the extra-orbital tooth posteriorly between the cardiac and branchial regions. Rostrum nearly as long as the eye. Superior antennæ three times as long as the eye, having the rami subequal and as long as the peduncle. The inferior antennæ with the squamiform appendage reaching nearly to the extremity of the superior antennæ. First pair of periopoda strong, having the palm oblique, marginate, and armed with alternating long and short hairs. Second pair of pereiopoda not reaching beyond the carpus of the first. Third pair slender and longer than the first, the remaining two shorter. Pleon short, suddenly narrowing at the fifth segment. Posterior pair of pleopoda longer than the telson, which is narrow and tipped with two long hairs. [*S. B.*]

Gulf of St. Vincent, 4½ fathoms.

Sub-Family Gnathophyllinæ.

Feet of the second pair stronger than the first. External maxillipedes broad, operculiform.

Genus GNATHOPHYLLUM, Latr.

339. **Gnathophyllum fasciolatum.** A.M.

Gnathophyllum fasciolatum, Stimpson, Proc. Acad. Nat. Sci. Philad., Vol. xii., p. 28.

Nearly allied to *G. elegans*, except in regard to the colour. Body thick. Carapace obtusely carinate dorsally, the carina obsolete posteriorly, and anteriorly continuous with the rostrum; rostrum short, not reaching the apex of the antepenultimate joint of the peduncle of the antennules, obliquely truncate above, a little concave, and six-toothed, the extremity acute, the lateral carinæ situated near the smooth inferior margin. Eyes rather large. Caudal segment armed with two marginal spines towards the extremity, and two long spines at the extremity. Body white, pellucid, ornamented with about ten linear transverse

purple grey bands, the peduncles of the eyes with two bands; the external maxillipedes marked on the surface with four rings of the same colour. [*Stimps.*]

Port Jackson; Port Stephens.

Genus RHYNCHOCYCLUS, Stimpson.

340. **Rhynchocyclus compressus.**

Rhynchocyclus compressus, Stimpson, Proc. Acad. Nat. Sci., Philad., Vol. xii., p. 28.

Body compressed. Carapace with a strong dorsal crest armed with two obtuse teeth, the anterior the larger, and armed anteriorly with a minute spine. Rostrum rather deeper than long, extending beyond the appendages of the antennæ, obliquely truncate, the upper margin concave, smooth. Infra-ocular spine minute. Margin of the carapace with three denticles at the insertion of the antennæ. External maxillipedes obtuse at the extremity and armed with seven strong horny spines. All the legs very short. Carpus of the first pair of legs obtuse. Colour greyish-purple, the back bluish. Length $\frac{3}{4}$ in. [*Stimps.*]

Port Jackson.

Family II. ATYIDÆ.

First and second pair of legs both small, weak, fingers ciliate. Hand articulated with the wrist by the middle of its lower margin. Wrist of the first and sometimes of the second pairs of legs lunate-excavate anteriorly, and of the second never annulated. Mandibles broad at the tip, slightly bilobed, not palpigerous.

Genus CARIDINA, Milne-Edwards.

Carapace with a well-developed rostrum. Internal antennæ with two multiarticulate flagella, of which one is thickened at the base. External maxillipedes long, slender, and pediform. Thoracic legs without an accessory palpus. Anterior legs short, with the wrist nearly triangular, broadest and lunate-excavate in front. Hand articulated with the wrist at its lower angle, fingers lamellar, and spoon-excavate at the extremities. Second pair longer and more slender, wrist of normal shape. Hand similar to that of first pair.

341. **Caridina truncifrons.**

Caridina truncifrons, Spence Bate, P. Z. S., 1863, p. 499, pl. xl., fig. 2.

Rostrum deeper than the cephalon, the extremity being the deepest part; the anterior margin slightly excavate, and armed with nine small teeth. Rostrum also furnished with a tooth upon the dorsal surface immediately above the eyes. Abdomen robust and but slightly curved. Internal antennæ reaching beyond the extremity of the rostrum. External antennæ having the scale acuminate, sub-apically tipped with a tooth, and reaching to the extremity of the rostrum. Three last pairs of ambulatory legs longer and rather more slender than the preceding, armed on the posterior margin with five or six equidistant solitary spines. Telson terminating obtusely, armed with two strong spines at the apex, and sub-apically furnished with a short cilium. [*S.B.*]

Gulf of St. Vincent, 4½ fathoms.

342. **Caridina cincinnuli.**

Caridina cincinnuli, Spence Bate, l. c., p. 500, pl. xl., fig. 3.

Back of carapace smooth. Rostrum only carinated below, armed with six teeth. Pleon smooth; third segment slightly gibbose, with a small tuft of hair on each side of the central line. Internal antennæ with the primary appendage but half the length of the secondary. External antennæ having the basal scale reaching quite to the extremity of the rostrum, rounded at the apex, and furnished with a sharp tooth one-third from the extremity; the flagellum more than half the length of the animal. Mandible with a short anteriorly directed process. Telson terminating in two or three small spines. [*S. B.*]

Gulf of St. Vincent, 4½ fathoms.

343. **Caridina tenuirostris.**

Caridina tenuirostris, Spence Bate, l. c., p. 501, pl. xl., fig. 4.

Rostrum long, slender, and armed with three teeth upon the upper surface near the base, and one upon the under surface near the apex. Pleon gibbous at the third segment. Internal

antennæ one-third longer than the rostrum, the secondary ramus rather shorter than the primary. The inferior antennæ with the basal scale reaching to the extremity of the rostrum, the lateral denticle one-fourth distant from the apex; the flagellum as long as the animal. Mandibles with an anteriorly directed process. [*S. B.*]

Gulf of St. Vincent, 4½ fathoms.

Family III. ALPHEIDÆ.

Rostrum usually short or obsolete. First pair of legs thicker than the second. Second pair slender, elongated, with the wrist annulated. Mandibles bilobed, or rarely simple, incurved, not palpigerous.

Genus HIPPOLYTE, Leach.

Rostrum long and laterally compressed, nearly always dentate, immobile, prolonged backwards on the surface of the carapace as a crest. Eyes prominent. Internal antennæ rather short, with two flagella, of which one is larger. External maxillipedes slender, rather long. First pair of legs short, but stouter than the rest. Second pair with the wrist multi-articulate. Abdomen suddenly deflexed in the middle. Caudal appendages lanceolate, ciliate on the margins.

344. Hippolyte spinicaudus.

Hippolyte spinicaudus, Milne-Edwards, Hist. Nat. Crust., t. ii., p. 378.

Body elongate, rostrum very long, styliform, taking origin by a tooth towards the middle of the gastric region, armed above with a spine, and below with two or three small spines. Basal squames of the external antennæ as in *H. varians* (large, extending a little beyond the rostrum, and oval or rather truncate obliquely from within outwards at the extremity). External maxillipedes of moderate size, and styliform towards the extremity. First pair of legs long and filiform, but not reaching the extremity of the basal scale of the antennæ. Those of the second pair of about the same length, but thicker, and having the carpus divided into three or four joints. Telson armed with six or seven pairs of spines (not including those of the posterior border). [*M.-E.*]

Australia (Mus. Paris).

345. Hippolyte gibberosus.

Hippolyte gibberosus, Milne-Edwards, Hist. Nat. Crust., ii., p. 378.

Rostrum taking origin in the posterior third of the carapace, much arched, and armed with four or five teeth at its base, then recurved strongly upwards, and having only one small spine towards the line of the extremity of the eyes, and two or three denticles at its point; lower border descending very low at the base, and armed with six or seven teeth, of which the posterior are very strong. Lateral spine of the internal antennæ very large. Lamellar appendage of the external antennæ nearly triangular. External maxillipedes short and truncated at the end. Anterior legs very small, and scarcely passing beyond the peduncle of the external antennæ, those of the second pair longer than those of the third, and having the lower part of the carpus divided into a large number of joints. [*M.-E.*]

Australia (Mus. Paris).

Genus ANGASIA, White.

Like *Hippolyte*, but the rostrum without dorsal carina, and the mandibles without appendage.

346. Angasia pavonina.

Angasia pavonina, Spence Bate, P. Z. S., 1863, p. 498, pl. xl., fig. 1.

Rostrum projecting as far in front of the eye as the carapace extends behind it, with a deep carina upon the inferior surface, having the margin furnished with four small teeth. Internal antennæ short, flagella reaching scarcely more than half the length of the rostrum; first joint of the peduncle with a long tooth. Basal squame of external antennæ reaching nearly to the extremity of the rostrum, flagellum reaching more than the length of the rostrum beyond it. External maxillipedes flat or spatuliform, fringed at the apex with eight or nine robust teeth. First pair of legs short, robust, and chelate, having the propodos longer than the carpus. Second pair long, slender, and chelate, having the propodos shorter than the carpus. Remaining pairs of legs shorter than the second and rather stouter; inner surface of the carpi and propoda armed with spines. Pleura of the five

anterior segments of the abdomen deeply produced. Telson terminating in an obtuse point, and armed near the central and terminal margins with two pairs of short spines. [*S. B.*]

Gulf of St. Vincent.

Genus VIRBIUS, Stimpson.

Resembles *Hippolyte*, but with the back of the carapace and rostrum ecarinate. Mandibles not palpigerous. External maxillipedes short, with an outer but not an inner palpus. Legs without a palpiform appendage. Legs of the first pair with the wrist excavate anteriorly, of the second pair with the wrist triarticulate.

347. Virbius australiensis.

Virbius australiensis, Stimpson, Proc. Acad. Nat. Sci. Philad., Vol. xii., Sp. 436.

Carapace smooth, with an orbital spine; antennary spine rather small, pterygostomian spine absent. Rostrum scarcely shorter than the carapace, smooth above, rather broad horizontally at the base, acute at the apex, the inferior margin cristate and sex-dentate. Antennules short, the peduncle half the length of the rostrum, internal flagellum twice as long as the external. Appendages of the antennæ large, oblong, exceeding the rostrum in length; peduncle armed with a spine at the base of the appendage. Second pair of legs not reaching to the apex of the peduncle of the antennæ. Posterior feet small, the last joint armed below with spinules, the dactylus internally multi-unguiculate. Abdomen smooth, strongly geniculate. Caudal segment furnished with two pairs of dorsal spines. Colour green. Length $1\frac{1}{2}$ in.

Port Jackson.

Genus ALPHEUS, Fabr.

Rostrum very short. Eyes concealed beneath the carapace. Internal antennæ with two flagella. Anterior legs very large, unequal, one hand greatly developed, of variable shape, chelate, with the movable finger uppermost.

348. **Alpheus brevirostris.**

Palæmon brevirostris, Olivier, Encycl., t. viii., p. 664, pl. 319, fig. 4.

Asphalius brevirostris, Roux, Mémoires sur les Salicoques, p. 22.

Alpheus brevirostris, Milne-Edwards, Hist. Nat. Crust., t. i., p. 350.

Rostrum short and continued behind in the form of a small simple crest. Anterior border of the orbits rounded and without spine. Second joint of the internal antennæ more than twice as long as the first. Squamous appendage of the external antennæ gradually narrowing towards the end, pointed, and passing considerably beyond the peduncle of the internal antennæ. Anterior legs large and compressed. Large hand—the left—ornamented above with two small crests; without crests on the external surface, having the inferior border nearly acute, and terminated by an immobile pointed finger, at the base of which is a circular cavity which receives a tubercle of the mobile finger; this last finger very much compressed and very obtuse at the end. Fingers of the other hand long, narrow, punctate, a little curved, ornamented with hairs on their prehensile border, and leaving between them a wide space. [*M.-E.*]

Australia (Paris Museum).

349. **Alpheus villosus.**

Palæmon villosus, Olivier, Encycl., t. viii., p. 664.

Alpheus villosus, Milne-Edwards, Hist. Nat. Crust., t. ii., p. 354.

Body covered with a rather close down. A small median crest, armed with a median spine at the base of the rostrum which is a little inflexed. A rudimentary spine on the anterior border of the orbital cavities. Second joint of the internal antennæ once and a half the length of the first joint. External antennæ with a large spine on the basal joint. Squamous appendage very narrow and scarcely passing beyond the peduncle of these organs; lateral spine of the basal joint very long. Large hand—the right—granular and very hairy above, a little twisted;

a deep longitudinal groove in the anterior half of the external surface, and terminated by an obtuse and very short immobile finger; the mobile finger equally obtuse and strongly curved. [*M.-E.*]

Australia (Mus. Paris).

350. Alpheus frontalis.

Alpheus frontalis, Milne-Edwards, Hist. Nat. Crust., t. ii., p. 356.

Carapace slightly carinated in its anterior portion; front very prominent, nearly triangular, not spiniform. Orbital vaults very prominent. Second joint of the internal antennæ slender and elongated. Lamellar appendages of the external antennæ shorter than the peduncle; no lateral spine at the base. Anterior legs smooth and very unequal; the large hand swollen, the smaller more or less compressed. [*M.-E.*]

Australia (Mus. Paris).

351. Alpheus Edwardsii.

Alpheis Neptunus, White, List Crust. Brit. Mus., p. 74, (1847). Zoology Erebus and Terror, tab. 4, f. 3, (1874).

Athanasus Edwardsii, Audouin, Savigny's Descr. de l'Egypte, pl. 10, fig. 1; not *Alpheus Edwardsii*, Milne-Edwards, Hist. Nat. des Crust., t. ii., p. 352: Dana, U. S. Explor. Exped., Crust., i., p. 542, pl. xxxiv., fig. 2.

Alpheus Edwardsii, Miers, Zool. Erebus and Terror, Crust., p. 4.

Rostrum linear, arising from the front margin of the carapace. Carapace more inflated than in *Alpheus strenuus*. Hand larger, similar to that of *A. strenuus*, but the fingers narrower compared with the palm. First joint of the carpus of the second pair of legs longer than the second, the second joint longer than either the third or fourth, and about as long as the fifth joint.

Port Essington (Brit. Mus.)

352. Alpheus strenuus.

Alpheus Doris, White, List Crust. Brit. Mus., p. 75, (1847); Zool. Erebus and Terror, tab. 4, fig. 2 (1874).

Alpheus Rhode, White, List Crust. Brit. Mus., p. 75 (1874).

Alpheus avarus, (Fabr.) Heller, Reise der Novara, Crust. p. 108.

Alpheus strenuus, Dana, U. S. Explor. Exped., Crust. i., p. 543, pl. xxxiv., fig. 2 (1152).

Rostrum elongate, acute, the surface between the eyes obscurely carinate. Basal squame of the external antennæ not longer than the peduncle. Second joint of the internal antennæ nearly twice as long as the first. Anterior legs very unequal, the hand of the larger with a concave and not triangulate infero-marginal sinus, the arm acutely unidentate at the apex. Smaller hand narrow oblong, somewhat pubescent, fingers densely hirsute within, hairs covering wholly extremity of moveable finger. [*D.*]

Torres Straits; Sydney. Found also in the Philippines, and at Tongatabu.

353. **Alpheus Comatularum.**

Alpheus Comatularum, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi.

Carapace broad, somewhat depressed. Rostrum very long, one-third of the length of the carapace, slender and acute, continued backwards over a third of the length of the carapace as an acute, prominent, arched crest. A prominent, acute supra-orbital spine more than one-third of the length of the rostrum. External antennæ with two acute spines at its base, the outer very large. Basal spine of internal antennæ long, acute. Propodos of large hand swollen, smooth; immobile finger nearly straight, with a hairy protuberance at the base of its inner border; mobile finger compressed, slightly hooked at the end, with a large recurved tooth on its trenchant border at the base. Length 1⅓ in. Carapace with longitudinal stripes of brownish purple, with a narrow mesial white line, which is continued on the two first abdominal segments; at the sides three short white markings. Abdomen with broad brownish purple and narrow white lines; bases of antennæ purple, longitudinal stripes of purple on the ambulatory legs. Large hand marked with longitudinal lines of light brown, bordered by narrow darker bands.

Dredged in a few fathoms of water in Albany Passage, near Cape York, Queensland, during the cruise of H.M.S. "Alert," in those waters. They were invariably found clinging to the arms of a species of *Comatulid* to which their markings gave them a general resemblance. Other commensals of these *Comatulids*

were *Galathea deflexifrons*, and an undescribed species of *Cymothoid*, the latter usually esconcing itself in the alimentary canal of its host, in which it remained buried with the exception of the anterior third of its body.

354. Alpheus Galathea.

Alpheus Galathea, White, List Crust. Brit. Mus., p. 75 (1847); Miers, Zool. Erebus and Terror, Crust., p. 5, tab. 4, fig. 4, (1875).

Port Essington.

355. Alpheus Alope.

Alpheus Alope, White, List Crust. Brit. Mus., p. 75 (1847); Miers, Zool. Erebus and Terror, p. 5, tab. 4, fig. 6.

Port Stephens.

Of this and the preceding species there is no description extant; the British Museum type specimens are in too bad a state to be distinctively characterised, and the figures in the "Zoology the Erebus and Terror" are not sufficient for determination. The same holds good of *A. Thetis* of the same author.

356. Alpheus Doto.

Alpheus Doto, White, List Crust. Brit. Museum., p. 75 (1847); Miers, l. c., p. 5, pl. 4, fig. 5.

Rostrum narrow, triangular, scarcely projecting beyond the front of the carapace. Upper margins of the orbits with a minute spine. Hands similar, the left the smallest. Right hand smooth, with scattered yellowish hairs, the lower margins straight, entire, the upper convex; fingers very small. First joint of the carpus of the second pair of legs longer than the second, the second joint about as long as the third and fourth together. [*Miers.*]

Sir C. Hardy's Island (Brit. Mus.]

357. Alpheus socialis.

Alpheus socialis, Heller, Reise der Novara, Crust. p. 106, pl. x., fig. 1.

Rostrum very short, triangular, arising between the bases of the eyes, separated from the orbit by a deep sulcus, its apex scarcely reaching to the middle of the first joint of the peduncle

of the antennules. Orbits anteriorly armed with a spinule, a little shorter than the rostrum. Basal squame of the antennules of the length of the first joint; second joint of the peduncle twice as long as the first. Base of antennæ armed with a long and acute spine, almost reaching the apex of the second joint of the peduncle of the antennules. Appendices very narrow anteriorly, almost triangular, shorter than the peduncles, with a large apical spine passing beyond the apex of the peduncle of the antennules. Anterior legs unequal; larger hand a little twisted outwards towards the extremity, the palm compressed, with entire margins, the upper margin provided with two longitudinal ridges; surface sparsely hairy; fingers very short, hairy. Second pair of legs longer than the third; posterior feet rather stout, the merus unarmed, the tarsus spinulose below, the dactylus acute, short.

Sydney (Heller). Found also at Auckland, New Zealand.

358. **Alpheus laevis.**

Alpheus laevis, Randall, Journ. Acad. Philad., viii., p. 141; Dana, l. c., p. 556, pl. xxxv., fig. 8; Heller, Reise der Novara, Crust., p. 107.

Rostrum acute, spiniform, arising between the bases of the eyes, sides almost straight. Basal scale of the external antennæ not shorter than the base, scarcely longer than the base of the internal antennæ; basal spine of the external antennæ moderate, that of the internal antennæ greatly elongated. Orbital spine very short. Anterior legs a little unequal, the larger hand smooth, compressed, with rounded entire margins, the fingers short; smaller hand oblong. Second pair of legs scarcely longer than ths third, the first joint of the carpus scarcely longer than the second, as long as the hand. Third pair of legs having the lower apex of the third joint not acute, tarsus broad and short.

Sydney (Heller); found also at the Society and Friendly Islands, the Sandwich Islands, and Fiji.

Genus Betæus, Dana.

Resembles *Alpheus*. Front without rostrum. Anterior hands more or less inverted, the mobile finger being the lower or outer.

359. Betæus australis.

Betæus australis, Stimpson, Proc. Acad. Nat. Sci. Philad., vol. xii., p. 28.

Body and abdomen slender, subcompressed, smooth. Front even, smooth, sometimes convex in the centre, with the margin convex. Peduncle of the antennules robust, cylindrical, equal to that of the antennæ, basal scale long, with a spiniform apex, extending beyond the penultimate joint. Appendix of the antennæ not reaching the apex of the peduncle; flagellum of moderate length, the basal portion thick. External maxillipedes not spinose at the apex. First pair of legs elongate, equal, the merus rough below; the anterior margins of the carpus dilated and 4-5 toothed, surrounding the base of the hand; hand elongate smooth, punctate, a little hairy below; fingers slender, longitudinal, shorter than the palm, gaping, internally bidentate, crossed at the tips. First joint of the carpus of the second pair of legs equalling the three following together. Posterior feet slender, the merus and carpus cylindrical, unarmed, the apices thickened; penultimate joint much more slender than the carpus obscurely spinulous. Caudal segment elongate. Colour green. Length 1 in. [*St.*]

Port Jackson (Stimpson).

360. Betæus trispinosus.

Betæus trispinosus, Stimpson, l. c., p. 28.

Front with a long needle-like rostrum, and armed with two acute orbital teeth which are half the length of the rostrum. Antennules large; peduncle extending far beyond the appendix of the antennæ; penultimate joint of the peduncle almost twice as long as the last and equal to the antepenultimate, the basal spine reaching the middle of the penultimate. External antennæ unarmed at the base, the peduncle not reaching the apex of the appendage. Anterior legs almost equal, hand elongate, palm twice as long as high, a little compressed, smooth, the inferior margin entire, the superior marked with deep grooves above, and sinuated near the dactylus. [*St.*]

Port Jackson (Stimpson).

Genus ALOPE, White.

Carapace smooth. Beak short, serrated above, buried in a deep groove, which has a spine on each side in front. Eyes with a thick, short peduncle, situated in a hollow on each side, and with a spine external to them on each side of the carapace, which is shorter than the inner spine. Inner antennæ thick, each with two flagella, of which one is very short. Outer antennæ with the basal scale longer than the joints of the peduncle, the flagellum very long. External maxillipedes very large, from the base nearly as long as the animal, first joint the longest, third joint more than twice as long as the second, compressed, blunted at the end. Anterior legs robust, with well-developed chelæ; second pair very slender, chelate, with many-jointed wrist (as in *Alpheus*); remaining legs slender, claws serrated below. [*White.*]

361. Alope palpalis.

Alope palpalis, White, Proc. Zool. Soc., p. 124 (1847); Ann. Mag. Nat. Hist. (Ser. 2), i., p. 225 (1848); Miers, Zool. "Erebus and Terror," Crust., p. 4, pl. iv., fig. 1 (1874); Cat. Crust., N.Z., p. 84 (1876).

Beak four-toothed above, entire below, about twice as long as the spine on each side. Terminal segment of the tail with a longitudinal median groove above, and with two pairs of small spines at its extremity. Anterior legs with the hand rough, the fingers opening horizontally. Length 2½ in.

Australian Coast. Found also in New Zealand.

Family IV. PALÆMONIDÆ.

Second pair of legs much larger and longer than the first, wrist never annulate. Mandibles deeply bilobed, often palpigerous. Rostrum well developed.

Genus ANCHISTIA, Dana.

Rostrum slender, generally ensiform and elongate. Body scarcely depressed, often compressed. Eyes moderate; antennules with two flagella. Mandibles not palpigerous. The antennæ provided with two flagella, one scarcely bifid. External maxillipedes slender, pediform,

362. Anchistia æsopia.

Anchistia æsopia, Spence Bate, P. Z. S., 1863, p. 502, pl. xli., fig. 5.

Rostrum nearly straight, armed above with nine teeth, the posterior standing near the centre of the carapace, and with two below near the apex. Carapace with an infra-orbital, a post-orbital, and an anterior branchial tooth. Pleon with the third segment postero-dorsally carinated and elevated into a hump-like tooth, being posteriorly produced to a point. Internal antennæ having the peduncle as long as the rostrum; the first joint, which is longer than the other two, broad, squamiform, and armed with two teeth; primary and secondary flagella fused together for about two-thirds of the length of the primary, the secondary half as long again as the primary, and the tertiary one-third of the length of the primary. Basal scale of external antennæ rounded at the point, armed with a tooth, and reaching quite to the extremity of the rostrum, the flagellum being as long as the animal. First pair of legs chelate, slender, the propodos slightly enlarged, the dactylus straight and nearly as long as the propodos. Second pair longer and thicker than the first, dactylus slightly longer than the antagonising process of the propodos. Telson obtuse at the apex and furnished with two long and four short spines. [*S. B.*]

Gulf of St. Vincent.

Genus PALÆMON, Fabr.

Carapace somewhat compressed and rounded above, with a marginal spine below the eyes, and sometimes a second spine placed behind it upon the hepatic region. Rostrum long, laterally compressed and dentated. Eyes prominent, not concealed by the carapace. Internal antennæ with three flagella. External maxillipedes slender. Mandibles with a three-jointed palpus. First and second pairs of legs chelate, the first pair slender, the second much longer and thicker, but not lamellate. Abdomen large.

Sub-Genus LEANDER, Desmarest.

Carapace with a lateral spine on the front margin, and a second marginal or sub-marginal spine placed beneath it, but without a spine on the hepatic regin behind the upper marginal spine. (Species usually of small size. Legs of the second pair not so greatly developed as in *Palæmon.*)

363. Leander natator.

Palæmon natator, M.-Edw., Hist. Nat. Crust., t. ii., p. 293 (1837).

Leander erraticus, Desmarest, Ann. Soc. Ent. France, p. 87 (1849).

Leander natator, Miers, Cat. Crust. N.Z., p. 86 (1876).

Rostrum about the length of the basal scale of the external antennæ, narrow at base, but very wide at the end, almost lance-shaped, with eleven or twelve teeth above, scarcely dentate below. Second pair of legs of moderate length, very slender towards the base, but narrowing to the extremity; palms ovoid; fingers slender and straight to near the end. Last abdominal segment terminating in three spines and two rather long bristles. Length about 1¼ in. [*M.-E.*]

Widely distributed.

364. Leander intermedius.

Leander intermedius, Stimpson, Proc. Acad. Nat. Sci. Philad., Vol. xii., Sp. 464.

Branchiostegal spine long, very acute, situated far back, near the margin. Rostrum slender, reaching beyond the appendages of the antennæ, reflexed, with seven teeth above (the third tooth above the eyes), quadridentate below, the apex bifid or bidentate. Eyes large. Antennules not shorter than the body, the two external flagella joined throughout half their length. External maxillipedes scarcely extending beyond the peduncle of the antennæ. Second pair of feet extending a little beyond the appendages of the antennæ, hand a little thickened, carpus scarcely longer than the fingers. Posterior feet moderate, sparsely armed with spines, dactyli rather long. Pellucid, marked with yellow lines, and sometimes sparsely dotted with black. Length 1 in. [*Stimps.*]

Port Jackson.

365. Leander serenus.

Leander serenus, Heller, Reise der Novara, Crust., p. 110, pl. x., fig. 5.

Carapace smooth. Rostrum extending a little beyond the appendices of the antennæ, ensiform, a little reflexed at the apex, with a straight superior crest, armed with 9–11 teeth placed

at equal distances, and continued over a third part of the carapace, the two terminal teeth a little removed from the others, smaller, placed near the apex; the inferior crest with 3–4 teeth. First pair of feet reaching the apex of the appendages or extending a little beyond them. Second pair of feet shorter than the carapace, cylindrical, smooth; the merus shorter than the appendages; carpus cylindrical, and almost equalling the chelæ in length, much longer than the palm; fingers not gaping, two-thirds of the length of the palm. Posterior feet rather long, the last extending beyond the appendages of the antennæ. [*Heller.*]

Sydney (Heller).

Sub-Genus PALÆMON,

Carapace with a single lateral spine on the front margin, and behind it a second spine, on the hepatic region. (Species often attaining a large size, and with the second pair of legs greatly developed.)

366. Palæmon ornatus.

Palæmon ornatus, Olivier, Encycl., viii., p. 660, (1812); M.-Edw., Hist. Nat. Crust., ii., p. 396, (1837); E. J. Miers, Cat. Crust. N.Z., p. 87, (1876).

Rostrum nearly straight, not reaching to, or at least not passing beyond, the end of the lamellar appendage of the external antennæ, and armed with eight to ten small teeth on its superior border, and with two or three on its lower border. Legs of the second pair very long, slender, and as it were chagrinate; carpus of about the same length as the palmar portion of the hand; fingers cylindrical, and a little looked at the end, and armed with a tooth on the mobile finger and two near the base of the immobile finger. In young individuals those teeth are scarcely visible, but in the course of growth, they become very strong. Following legs nearly smooth and having the terminal joint extremely short. Last segment of the abdomen obtuse at the end, terminated by a semicircular border, armed on each side with a spine. Length nearly 6 inches. [*M.-E.*]

Widely distributed in Australia. Found also at the Mauritius, Fijis, New Hebrides, New Zealand, etc.

367. Palæmon Danæ.

Palæmon Danæ, Heller, Reise der Novara, Crust., p. 120, pl. xi., fig. 3.

Rostrum ensiform, the apex a little reflexed, not shorter than the appendage of the antennæ, above slightly convex and armed with 10-11 teeth, the teeth almost equidistant and continued on the third part of the dorsum of the carapace, the first smaller and approximated to the apex; the lower border a little arched, tridentate. First pair of feet scarcely extending beyond the rostrum. Second pair of feet longer than the rostrum, cylindrical, smooth, the propodos reaching the apex of the rostrum. [*H.*]

Sydney (Heller).

368. Palæmon, sp.

Tasmania (Australian Museum).

Family V. PANDALIDÆ.

Anterior legs very slender, not chelate; the second pair filiform, the carpus annulated. Rostrum long, compressed, and toothed.

Genus PANDALUS, Leach.

Rostrum toothed above and below. Eyes thick, short, and free. Superior antennæ similar to those of *Palæmon*, but with only two flagella. External maxillipedes slender and pediform. Abdomen as in the *Palæmonidæ*.

369. Pandalus leptorhynchus.

Pandalus leptorhynchus, Stimpson, Proc. Acad. Nat. Sci. Philad., Vol. xii., Sp. 447.

Body very slender. Carapace scarcely crested, armed with one dorsal spine in the gastric region, anterior margin with supra-orbital, antennary, and pterygostomial spines. Rostrum very slender, almost filiform, not shorter than the carapace, armed above towards the base with a single anteriorly directed tooth, with two minute teeth below, one about the middle, the other near the acute apex. Peduncle of the antennules very slender, one-fourth shorter than the rostrum, with a broad basal

squame, with a spiniform outer apex; flagellum not longer than the peduncle. Appendages of the antennæ not shorter than the rostrum. Third, fourth, and fifth pairs of feet subprehensile—the dactylus capable of being retracted against the side of the penultimate joint. Abdomen strongly geniculate, the third segment armed with a very obtuse carina, the sixth segment very long. Subpellucid, ornamented with yellow lines and black dots. Length 1 in. [*Stimps.*]

Port Jackson.

Sub-Tribe PENÆIDEA.

Carapace without sutures. External antennæ with a large basal squame. Feet of the first and second pairs not thicker than the third, the third often rather thicker, longer, and chelate; rarely all the legs weak and slender, the third either obsoletely chelate or completely vergiform.

Family PENÆIDÆ.

Three anterior pairs of legs chelate, longer than the rest, and more or less stronger.

Genus PENÆUS, Latr.

Three anterior pairs of feet linear; two posterior pairs not annulated. Carapace with a long ensiform rostrum. Abdominal feet with two laminæ. External maxillipedes palpigerous.

370. Penæus canaliculatus.

Palæmon canaliculatus, Olivier, Encycl., viii., p. 660 (1811).

Penæus canaliculatus, M.-Edw., Hist. Nat. Crust., ii., p. 414 (1837); De Haan, Faun. Japon., Crust., p. 190 (1849); E. J. Miers, P. Z. S., 1878, p. 298; Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 38 (1879).

Penæus plebejus, Hess, Arch. für Nat., Vol. xxxi., p. 168, pl. vii., fig. 19.

A median crest, mesially grooved behind, and with a deep longitudinal groove on either side of it continued from the base of the rostrum to the posterior border of the carapace. Rostrum

as long as the peduncles of the antennules, curved slightly upwards towards the acute extremity, armed with 10–12 teeth above and one below. A very strong tooth on the anterior border of the carapace above the insertion of the antennæ; a second, much smaller, between that and the rostrum; and a third behind the rudimentary cervical suture at the base of the first. Base of the legs of the two first pairs armed with strong spines. Telson with three spines on each side. Length sometimes upwards of 6 in.

Common on the coast of Australia. Found also in Celebes, at Shanghai, Yokohama, the Loyalty Islands, the Gulf of Suez, etc.

371. Penæus semisulcatus.

Penæus semisulcatus, De Haan, Faun. Japon., Crust., p. 191, pl. xlvi., fig. 1 (1849); Miers, l. c., p. 299.

A dorsal carina extending to the posterior margin, faintly or obsoletely sulcated. Gastro-hepatic sulcus faintly defined. Rostrum long, 7–8-toothed above, 3-toothed below. First pair of legs bispinose, second pair unispinose, third unarmed at the base.

Northern parts of the Australian coast. Found also on the coasts of India, Formosa, the Philippines, and Fiji.

372. Penæus monodon.

Penæus monodon, Fabr., Suppl., p. 408; Latr., Hist. Nat. des An. et Ins., t. vi., p. 249; Lamarck, Hist. des An. sans Vert., t. v., p. 205; Desmarest, Consid., p. 225; Milne-Edwards, Hist. Nat. Crust., t. ii., p. 416; Miers, l. c., p. 307.

A short dorsal carina, without sulci, and not reaching to the posterior extremity of the carapace. Gastro-hepatic sulcus deep. Rostrum with 6–7 teeth above—those toward the apex separated by greater intervals than exist between those of *P. semisulcatus;* with 3 teeth below; not reaching beyond the antennal scale. Telson acute.

Western Australia. Found also in Ceylon.

373. Penæus monoceros.

Penæus monoceros, Fabr., Suppl., p. 409; Latr., l. c., p. 249, Milne-Edwards, l. c., p. 415; Miers, l. c., p. 301.

Dorsal carina not sulcate. Rostrum long, but not reaching far beyond the antennary squame, ensiform straight, with 8-10 teeth above, the teeth extending along the whole upper margin, unarmed below. Telson without lateral spines.

Endeavour River. Found also on the coasts of India.

374. Penæus esculentus.

Penæus esculentus, Haswell, l. c., p. 38.

Rostrum extending nearly as far forward as the distal end of the second joint of the internal antennæ, pointed, and very slightly recurved near the tip; its superior border armed with a series of six pointed teeth, of which the most posterior is separated from the next by a distance greater than the intervals between the others; its lower border armed with three or four teeth, the intervals between which increase slightly in length distally—the most anterior being separated by a longer interval from the apex of the rostrum than from its successor; rostrum continued backwards into a non-sulcated carina, which, however, loses itself before attaining the posterior border of the carapace; on each side of the rostrum a groove or sulcus, which, commencing as an obscure linear depression near the tip of the rostrum, increases in breadth and depth posteriorly, but becomes lost about the middle of the carapace. Supra-orbital spine absent; hepatic and antennary spines present; gastro-hepatic sulcus very deep; cervical groove obsolete posteriorly. Rami of antennules short; the internal scarcely equalling in length the two last segments of the peduncle; the external somewhat longer. Outer maxillipedes hairy, the palp short, hardly reaching to the distal end of the second joint of the endopodite. Ambulatory legs increasing in length to the third, which is nearly as long as the carapace and rostrum; the fourth pair much shorter than the third, but equal to the second; the fifth intermediate in length between the second and third. First pair with a long acute spine on the under surface of the second joint, and another on the under surface of the third joint; the second pair with a single spine on

the second joint. Abdomen with well-marked carina on the fourth, fifth, and sixth segments; the first, second, fourth and fifth segments with a notch on each side posteriorly. Seventh segment strongly grooved on the middle dorsal line, its apex spiniform, its lateral margin devoid of spines. Appendages of sixth segment rounded distally, the inner slightly more pointed. Length of largest specimen 9 in.

Port Jackson; Port Darwin (Alex. Morton).

This is the common edible prawn of Sydney, Newcastle, etc.

375. **Penæus Macleayi.**

Penæus Macleayi, Haswell, l. c., p. 40.

Rostrum extending nearly as far forward as the end of the antennary scale, very slender and styliform near the apex, which is recurved; armed with five or six teeth above, of which the fifth is separated from the fourth by an interval greater than that separating the others; unarmed below; produced behind into a low carina, which broadens out and becomes lost before attaining the posterior third of the carapace; a lateral groove at the side of the rostrum and the anterior part of the carapace. Gastro-hepatic sulcus deep. Supra-orbital spine absent; antennary and hepatic spines present. Filaments of antennules sub-equal, scarcely equal in length to the two last joints of the peduncle. External maxillipedes slender, hairy; palp extending as far as the middle of the third articulation of the endopodite. First pair of ambulatory legs as long as the antennary scale, very hairy internally; second and third progressively longer; fourth shorter than third; fifth the longest of all, and very slender. First and second and sometimes third pairs each with a spine at the base of the second joint. Abdomen having the fourth, fifth, and sixth segments dorsally carinated; carina ending in a small spine at the posterior border of the sixth segment. Terminal segment longitudinally grooved in the middle dorsal line, ending in a spiniform apex, ciliated laterally, and armed on each side near the extremity with a strong spine, with two or three weaker spines immediately anterior to it. Length 5 in.

Port Jackson.

376. Penæus granulosus.

Penæus granulosus, Haswell, l. c. p. 41.

Rostrum rather short, not reaching so far as the end of the antennary scale, very slightly recurved, with ten small teeth above, situated close together anteriorly—the intervals between consecutive teeth increasing progressively from before backwards, the last separated from the penultimate by a wide interval; under surface toothless, with a fringe of very long cilia. Rostrum continued backwards into a blunt carina, which is non-sulcate, and reaches to the posterior margin of the carapace; no lateral sulci. Carapace granular. Supra-orbital spine present, small; antennary and hepatic spines present; gastro-hepatic sulcus almost obsolete. Eyes large. Antennules with the flagella sub-equal, nearly equal in length to the peduncle. External maxillipedes hairy, the first three joints of the endopodite broad, compressed; flagellum reaching hardly as far as the distal end of the second joint. Ambulatory limbs progressively increasing in length to the third pair; fourth shorter than, fifth equal to the third pair. First and second pairs both unispinous, third non-spinous. Surface of abdomen minutely granular; third, fourth, fifth and sixth segments with a mesial dorsal carina, which ends in a small spine on the sixth segment. First, second, fourth and fifth rings with a lateral notch on their posterior border; those on the first and second segments shallow and open, those on the fourth and fifth rather deeper. Seventh segment mesially grooved; its apex acute, but not developed into a spine; its lateral margin with a single, weak spine.

The above is the description of the adult female. From the some localities are a number of small male specimens, which seem to be the males of this species; they differ from the females in the following points:—(1) the rostrum is a shade higher and more compressed; (2) the peduncles of the antennæ are rather shorter; (3) the anterior pair of legs are bispinous; (4) there is no marked dorsal carina on the carapace. Length of female $3\frac{1}{3}$ in.; of male $2\frac{1}{2}$ in.

Darnley Island; Cape Grenville; Cape York (Macleay Museum).

377. **Penæus Mastersii.**

Penæus Mastersii, Haswell, l. c., p. 42.

Rostrum reaching nearly as far as the end of the antennary scale, slender, nearly straight; armed above with eight or nine teeth, of which the last is separated by a wide interval from the penultimate; unarmed below; continued back into a non-sulcate carina which does not reach to the posterior margin. A slight lateral groove at the side of the rostrum, not continued backwards. Carapace smooth; supra-orbital spine rudimentary; hepatic and antennary spines present, acute; gastro-hepatic sulcus deep; cervical suture well-marked in its anterior half. Eyes large; flagella of antennules equal in length to the two last segments of the peduncle. External maxillipedes rather slender; palp extending to the distal end of the ante-penultimate joint of the endopodite. First three pairs of legs progressively increasing in length from before backwards; fourth much shorter than third; fifth of about the same length as the latter; first three pairs with a spine on the under surface of their second joint. Fourth, fifth, and sixth segments of abdomen carinated, the carina on the sixth segment ending in a small spine; the posterior border of the first, second, fourth, and fifth with a notch on each side—shallow and wide on the first and second, deeper and narrower on the fourth and fifth. Last abdominal segment mesially grooved, and with a slight lateral groove near each external border, apex pointed, but not markedly spiniform; lateral margin devoid of spines. Length 3¾ in.

Port Darwin (Macleay Museum).

378. **Penæus Novæ-Guineæ.**

Penæus Novæ-Guineæ, Haswell, l. c., p. 43.

Rostrum rather short, not quite reaching to the end of the antennary scale; straight, sub-acute, armed above with six small teeth; unarmed below. No marked dorsal carina, nor longitudinal sulci on the carapace. Surface of carapace pilose; gastro-hepatic sulcus moderately deep; hepatic and supra-orbital spines absent. Eyes large. External maxillipedes hairy, palp extending to the distal end of the second joint. Third pair of ambulatory legs longer than second; fourth shorter than third; fifth about equalling the latter in length. Under surfaces of second and third pairs devoid of spines. Abdomen pilose, a

mesial dorsal carina on the second, third, fourth, fifth and sixth. A deep lateral notch on the posterior border of the fourth and fifth segments. Last abdominal segment with a narrow mesial groove; its apex spiniform; its lateral border armed with three spines. Length 2½ in.

A single, imperfect, male specimen of this species, from Katow, New Guinea, is in the Macleay Museum collection.

379. **Penæus Palmensis.**

Penæus Palmensis, Haswell, l. c., p. 43.

Rostrum short, hardly exceeding the eyes in length, strongly reflexed from the base, straight in the rest of its extent, sub-acute, with eight teeth above—the last separated from the penultimate by a wide interval; unarmed below. No dorsal carina on the carapace. Surface of carapace pilose; gastro-hepatic sulcus shallow; orbital spine absent; antennary and hepatic spines present. Flagella of antennules very short, not much exceeding in length the last segment of the peduncle. Palp of external maxillipedes exceedingly short and slender. Proportionate length of ambulatory limbs as in preceding species; a spine on the under surface of the second joint of the first and second pairs. Abdomen with the second to the sixth segments carinated. Posterior borders of the first and second with a shallow excavation on each side; those of the fourth and fifth with deep notches. No spines in the middle of the posterior border of the sixth segment. Last segment with a narrow mesial groove; its apex spiniform; its lateral margins armed with several spines. Length about 1½ in.

Palm Island (Chevert Exped.).

Genus Sicyonia, Milne-Edwards.

Three anterior pairs of legs linear; two posterior pairs not annulated. Carapace with a short rostrum, semi-calcareous, dorsally carinate. Abdominal appendages uniramous. Second and third pairs of maxillipedes not palpigerous. Internal antennæ very short.

380. **Sicyonia sp.?**

Rostrum and dorsal carina of carapace with seven strong teeth above; rostrum not reaching to the extremity of the antennary

the second joint. Abdomen with well-marked carina on the fourth, fifth, and sixth segments; the first, second, fourth and fifth segments with a notch on each side posteriorly. Seventh segment strongly grooved on the middle dorsal line, its apex spiniform, its lateral margin devoid of spines. Appendages of sixth segment rounded distally, the inner slightly more pointed. Length of largest specimen 9 in.

Port Jackson; Port Darwin (Alex. Morton).

This is the common edible prawn of Sydney, Newcastle, etc.

375. **Penæus Macleayi.**

Penæus Macleayi, Haswell, l. c., p. 40.

Rostrum extending nearly as far forward as the end of the antennary scale, very slender and styliform near the apex, which is recurved; armed with five or six teeth above, of which the fifth is separated from the fourth by an interval greater than that separating the others; unarmed below; produced behind into a low carina, which broadens out and becomes lost before attaining the posterior third of the carapace; a lateral groove at the side of the rostrum and the anterior part of the carapace. Gastro-hepatic sulcus deep. Supra-orbital spine absent; antennary and hepatic spines present. Filaments of antennules sub-equal, scarcely equal in length to the two last joints of the peduncle. External maxillipedes slender, hairy; palp extending as far as the middle of the third articulation of the endopodite. First pair of ambulatory legs as long as the antennary scale, very hairy internally; second and third progressively longer; fourth shorter than third; fifth the longest of all, and very slender. First and second and sometimes third pairs each with a spine at the base of the second joint. Abdomen having the fourth, fifth, and sixth segments dorsally carinated; carina ending in a small spine at the posterior border of the sixth segment. Terminal segment longitudinally grooved in the middle dorsal line, ending in a spiniform apex, ciliated laterally, and armed on each side near the extremity with a strong spine, with two or three weaker spines immediately anterior to it. Length 5 in.

Port Jackson.

382. Lysiosquilla Brazieri. **A.M.**

Lysiosquilla Brazieri, Miers, Ann. Mag. N. H. (5), v., p. 11, pl. i., figs. 3–6.

Carapace longer than broad; posterior margin twice as broad as the anterior, with the antero-lateral angles obtuse and the postero-lateral rounded. Rostrum broader than long, with the antero-lateral angles rounded and with a long median spine. A small spine on each side of the antennal segment. Dactyli of the raptorial limbs six-spined. Appendages of last pair of thoracic limbs scarcely dilated, almost linear, two preceding pairs ovate and broadly expanded. Telson twice as broad as long, convex, with seven spinules disposed in a transverse series behind the middle line; the median flat, trigonous, and not produced at the base, the next on each side produced at base on its outer margin, the third somewhat thickened at base; postero-lateral margin with three narrow acute spines (the last mobile), a single spinule between the anterior spines, three between the posterior; posterior margin without median sinus, armed with about fourteen very minute spines. [*Miers*].

Port Jackson.

383. Lysiosquilla acanthocarpus.

Coronis acanthocarpus, Gray (ined.), White, List Crust. Brit. Mus., p. 85 (1847).

Lysiosquilla acanthocarpus, Miers, l. c., p. 11, pl. i., figs. 7–9.

Dilated basal portion of the rostral plate nearly quadrate, antero-lateral angles right angles; terminal median spine rather short and somewhat triangular, broadest at base. Telson with six small spines in a transverse series on its upper surface, with three pairs of marginal spines, the median pair movable and smaller than the rest, and with the interval between them finely serrated; two spinules between those and each lateral pair, one spinule between the teeth of each lateral pair. Dactyli of raptorial limbs with six spines, the last very small. [*Miers.*]

Port Essington (Brit. Museum).

Genus CHLORIDELLA, Eydoux et Souleyet.

Allied to *Squilla*, but with the eye-peduncles ovoid, dilated in their middle, and constricted at the extremity. Rostral plate and carapace very small. Cervical suture distinct posteriorly.

384. Chloridella microphthalma.

Squilla microphthalma, Milne-Edwards, Hist. Nat. Crust., ii., p. 523 (1837).

Chlorida microphthalma, Eyd. et Soul., Voy. de la Bonité, Crust., p. 266 (1841).

Chloridella microphthalma, Miers, l. c., p. 14, pl. ii., figs. 1–4.

Carapace smooth, widening posteriorly, with a small spine at the antero-lateral and broadly rounded at the postero-lateral angles, rostral plate small, semi-oval and regularly rounded. Fourth thoracic segment armed on each side with a small spinule. First to fifth segments of the abdomen faintly marked with two lateral carinæ; sixth segment with sub-median carinæ as well as lateral, all terminating in spines. Terminal segment broader than long, with a median obtuse crest, and on either side of it several irregular tubercles, and with six acute marginal teeth, between which are a number of smaller spiniform teeth. Dactyli of raptorial limbs four-spined, terminal spine very long. [*M.*]

Port Essington (Brit. Museum). Obtained also at Singapore.

Genus Squilla, Fabr.

Carapace usually marked with more or less distinct longitudinal costæ. Cervical suture posteriorly distinct. Rostral plate rarely covering the base of the eye-peduncles. The four or five posterior exposed thoracic segments, and the abdominal segments compactly articulated, the latter marked with six or eight longitudinal carinæ; terminal segment without, or with two very minute mobile spines at its distal end. Dactylus of raptorial limbs not dilated at base, and armed with long spines on its inner margin. Appendages of the three posterior thoracic limbs slender and styliform. [*M.*]

385. Squilla miles.

Squilla miles, Hess, Archiv für Nat., xxxi., p. 169, pl. vii., fig. 21 (1865); Miers, l. c., p. 17.

Carapace elongated and narrowed anteriorly, with the cervical suture strongly defined and deeply sinuated posteriorly; on the postero-lateral regions of the carapace are two short lateral carinæ; antero-lateral as well as postero-lateral angles of

carapace rounded. On the fifth abdominal segment the lateral carinæ and on the sixth all the carinæ terminate in spines. Telson with five longitudinal median crests, and the interspaces with small irregular prominences; with six strong marginal spines and numerous smaller denticles in the interspaces; sub-median marginal spines each terminating in a small mobile spinule. Dactyli of raptorial limbs small, with three spines besides the terminal one.

Sydney (Hess); Victoria (Brit. Museum).

386. **Squilla nepa.**

Squilla nepa, Latr., Encycl., x., p. 471; M.-Edw., Hist. Nat. Crust., ii., p. 522 (1837); White, List Crust. Brit. Mus., p. 83 (1847); Heller, Reise der Novara, Crust., p. 124 (1865); Miers, Cat. Crust. N.Z., p. 89 (1876), Ann. Mag. N. H. (5), v., p. 25, pl. ii., fig. 13.

Squilla oratoria, De Haan, Faun. Japon. Crust., p. 223, pl. li., fig. 2; Dana, U. S. Explor. Exped., Crust., i., p. 621; Heller, Reise der Novara, Crust., p. 124 (1865).

? Squilla lævis, Hess, Archiv für Nat., xxxi., p. 170, pl. vii., fig. 22 (1865).

Rostral plate usually oblong, smooth above, without a median carina; lateral margin of carapace not angulated in front of the postero-lateral lobe; exposed thoracic segments, and usually two or three of the anterior abdominal segments marked with a longitudinal median impressed line. Lateral processes of the first three exposed thoracic segments bilobate, the anterior lobe of the first segment elongated, curved forwards, and acute; in the second and third segments the posterior lobe is the larger and acute. On the second to the sixth abdominal segment usually a small median tubercle, the first lateral carinæ usually interrupted; upper surface of terminal segment marked with shallow pits symmetrically disposed in curved lines on either side of the median keel; between the sub-median terminal spines usually from six to eight, and between the sub-median and first lateral spines usually seven or eight small denticles or spinules. Distal prolongation of base of uropoda ending in two slender elongated spines, the inner and longer of which has a small tooth

or lobe on its outer margin. Dactyli of raptorial limbs armed with six spines. [*M.*]

Port Curtis. Generally distributed in the Indo-pacific region.

Genus PSEUDOSQUILLA, Guérin.

Carapace not longitudinally costate; cervical suture faintly defined or obsolete posteriorly. Rostral plate reaching to and covering the base of the eye-peduncles. Four posterior thoracic segments not covered by the carapace. Exposed thoracic and abdominal segments compactly articulated; the latter smooth, not longitudinally costate; the terminal segment well developed, and bearing at its distal end two mobile spines. Dactylus of the raptorial limbs not dilated at base, unarmed, or with few spines on its inner margin. Appendages of three posterior thoracic limbs slender and styliform.

387. Pseudosquilla ciliata.

? Squilla ciliata. Fabr., Ent. Syst., ii., p. 512 (1793); Owen, Zool. Voy. "Blossom," p. 90, pl. xxvii., fig. 5 (1839); White, List Crust. Brit. Mus., p. 84 (1847).

Squilla stylifera, Lam., Hist. des An. sans Vert., v., p. 189; Latr., Encycl., x., p. 472; Guérin, Icon., pl. xxiv., fig. 1; M.-Edw., Hist. Nat. Crust., ii., p. 526.

Pseudosquilla stylifera, Dana, U. S. Explor. Exped., Crust., i., p. 622, pl. xli., fig. 4.

Pseudosquilla ciliata, Miers, Ann. Mag. N. H. (5), v., p. 108, pl. iii., figs. 7, 8.

Carapace smooth, with the longitudinal sutures straight and continuous from the anterior to the posterior margin, but without the transverse cervical suture; its posterior margin straight, with the antero-lateral and postero-lateral angles rounded and not produced. Rostral plate nearly of a transversely oval shape, smooth above. Exposed thoracic segments not produced laterally; the first segment very narrow and acute on the sides, the second broader and laterally sub-truncated, the third more rounded laterally. The fifth abdominal segment with a small tooth or spine at its postero-lateral angle; the sixth segment armed with six spines, the second on each side being placed nearer to the anterior margin. Telson armed with two longitudinal carinæ on

each side of the median keel (the inner of the two being much less strongly marked), with a third carina on each side close to the lateral margin; six lateral spines, the two mobile and submedian spines being the longest. Dactyli of raptorial limbs armed with three slender spines (including the terminal spine which is longest). Terminal spines of the basal prolongation of the uropoda nearly equal; inner spine not toothed on its outer margin. Length nearly 3 in. [*M.*]

Widely distributed throughout the Indo-Pacific region, and found also at the Mauritius, in the Red Sea, and at Cuba.

Genus GONODACTYLUS, Latr.

Allied to *Pseudosquilla*, but with the penultimate joint of the raptorial limbs not armed with minute pectinately-disposed teeth, and with the dactylus considerably dilated at the base; the mobile spines at the distal extremity of the telson small or obsolete.

388. Gonodactylus chiragra. A.M.

Squilla chiragra, Fabr., Ent. Syst., ii., p. 513, Supp., p. 417; Desmarest, Consid., p. 251, pl. xliii.

Cancer (Mantis) chiragra, Herbst, Naturg. Krabben, &c., ii., p. 100, pl. xxxiv., fig. 2.

Gonodactylus chiragra, Latr., Encycl., x., p. 473; M.-Edw., Hist. Nat. Crust., ii., p. 528; White, List Crust. Brit. Mus., p. 84; Dana, U. S. Explor. Exped., Crust., i., p. 623, pl. xli., fig. 5; Heller, Reise Novara, Crust., p. 126; Miers, Phil. Trans., clxviii., p. 495; Ann. Mag. N. H. (5), v., p. 118.

Carapace smooth, nearly oblong, with the sides parallel, the antero-lateral and postero-lateral angles unarmed and rounded. Median spine of rostrum long and acute, its lateral lobes but little prominent and rounded. First exposed thoracic segment not produced; lateral process of the second segment somewhat rounded, that of the third segment sub-truncate, and that of the fourth segment narrowed towards the lateral margin. Lateral margins of the first to fifth abdominal segments carinated, the carinæ not ending in spines; sixth segment with six equidistant longitudinal prominences, which are narrowed posteriorly, and terminate each in a spine. Upper surface of telson armed with

three elongated and convex prominences or tubercles, which do not terminate in spines, and with four triangular marginal teeth, of which the two posterior are very large and tipped each with a small mobile spinule. Antennules and antennæ small and slender; dactyli of raptorial limbs without teeth on their inner margins, which are furnished with two rows of granules in their basal, and with a thin cutting edge in their terminal half; basal part of the dactylus considerably thickened externally, the styliform terminal portion acute and usually sinuate. Distal prolongation of the base of the uropoda ending in two rather short strong spines—the outer of which has no tooth on its inner margin. Length nearly 4 in. [*M.*]

Port Denison; Torres Straits; Swan River. A species of wide range throughout the Oriental Region, very common on coral reefs in tropical Australia.

389. Gonodactylus graphurus. A.M.

Gonodactylus graphurus, White, List Crust. Brit. Mus., p. 85; Miers, Ann. Mag. N. H. (4), xvi., p. 344, and (5), v., p. 120, pl. iii., fig. 9.

This species differs from the preceding in the presence of a small median keel between the innermost prominences of the sixth abdominal segment; in the possession of seven closely-placed prominences on the upper surface of the telson, the median being the largest, the others becoming successively smaller, and the median and sub-median being usually armed with spines; in the presence of six marginal spines, and in the presence of a small tooth on the inner margin of the basal prolongation of the uropoda. [*M.*]

Port Denison; Port Curtis; Cumberland Island; Torres Straits; Port Essington, etc. Widely distributed in the Indo-Pacific Region, and not uncommon on coral reefs within the tropics in Australia, but rarer than the preceding.

390. Gonodactylus trispinosus.

Gonodactylus trispinosus, White, List Crust. Brit. Mus., p. 85; Dana, U.S. Explor. Exped., Crust., i., p. 623; Heller, Reise der Novara, Crust., p. 126; Miers, Cat. Crust., N.Z., p. 90, and Ann. Mag. N.H. (5), v., p. 121, pl. iii., fig. 10.

Antero-lateral angles of rostrum produced into spines, which are nearly as long as the median spine. Fifth abdominal segment longitudinally corrugated; sixth apparently coalescent with the telson, and armed with six convex tubercles. Telson armed above with three convex rounded tubercles disposed in a triangle; behind these the upper surface marked with impressed lines; posterior margin with a median notch, and divided by narrow fissures into about six truncated lobes. Styliform termination of the dactyli of the raptorial limbs short, unarmed. Outer of the spines of the basal prolongation of the uropoda larger than the inner, and armed with a tooth on its inner margin. Length about 1½ in. [*M.*]

Swan River; Shark's Bay. Found also at Fiji and Auckland.

II. EDRIOPHTHALMATA.

Malacostracous Crustacea with mandibles and maxillipedes adapted for mastication, sessile eyes, and destitute of a carapace.

Tribe I. AMPHIPODA.

Body rounded above, and laterally compressed, the seven pair of thoracic legs consisting of an anterior series of four pairs (of which the first two have a more or less perfectly chelate hand), and a posterior series of three pairs. Branchial vesicles pendent from the thoracic limbs. Segments of the abdomen distinct, the abdomen usually elongated, but sometimes rudimentary. Abdominal appendages of the first three segments elongate, ciliated and flexible; of the three succeeding pairs styliform, terminal segment small, or rudimentary.

Group Normalia.

Coxæ of the pereiopoda squamiformly developed, generally large enough to protect the branchial sacs. Pleon normally developed. Three anterior pairs of pereiopoda consisting of ciliated, double-branched, multi-articulate, flexible appendages, which are used in swimming, and originate on the ventral surface. Three posterior pairs of pleopoda consisting of stiff, generally double-branched stylets, of which the last pair vary more than the others, and sometimes have the spines developed

into hooks. Telson formed of a single, or double, unimportant minute plate, sometimes furnished with hook-like spines. [*S. B.*]

Division GAMMARINA.

Upper antennæ consisting of a peduncle of three joints and a multi-articulate flagellum, with sometimes a secondary appendage originating at its base. The lower antennæ consisting of a peduncle of five joints (of which the first two are more or less fused together and bear the olfactory denticle) and a flagellum. Maxillipedes covering the preceding appendages of the mouth. One or both of the gnathopoda sub-chelate. [*S. B.*]

Sub-Division Vagantia.

Lower antennæ terminating like the superior; spines upon the posterior pleopoda never developed into hooks, but generally into fine hairs, except in the *Saltatoria*. [*S. B.*]

Legion SALTATORIA.

Posterior pair of pleopoda never exceeding the preceding in length. Hairs on the entire animal short and stiff. Mode of progression, when out of the water, by leaps. [*S. B.*]

Family I. ORCHESTIDÆ.

Upper antennæ shorter than the lower, and not furnished with a secondary appendage. Mandibles without an appendage. Coxæ largely developed. Three posterior pairs of pleopoda short and robust, the last unibranched. [*S. B.*]

Genus TALITRUS, Latr.

Upper antennæ not reaching the extremity of the penultimate articulation of the peduncle of the lower. Lower antennæ having the two basal articulations absorbed in the frontal wall of the head. Mandibles not palpigerous. Maxillipedes not unguiculate. First pair of gnathopoda not subcheliform in either sex; second pair of gnathopoda rudimentary and imperfectly subcheliform in both sexes. Coxæ of the third pair of pereiopoda almost as deep as those of the preceding pereiopoda, and divided into two equal scales. Posterior pleopoda unibranched. Telson single.

391. Talitrus sylvaticus. A.M.

Talitrus sylvaticus, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 245, pl. vii., fig. 1.

Superior antennæ nearly equal in length to the cephalon and first segment of the pereion; first segment of the peduncle compressed; second segment the longest; third very short; flagellum rather shorter than the peduncle. Inferior antennæ equal in length to the cephalon and pereion; peduncle with three articuli visible, the third nearly twice as long as the second; flagellum longer than peduncle, finely fringed with cilia. Mandibles powerful, very deep; furnished with a large and prominent molar eminence crossed by about a dozen dentary ridges; cutting edge armed with four teeth, that nearest the molar surface bifurcated, the next two simple, prominent, the fourth inconspicuous; between the first of these teeth and the molar eminence are several pointed, curved, ciliated spines. Maxillipedes resembling somewhat those of *T. locusta;* the plate of the first articulation armed with three short blunt teeth, that of the second articulation ending in a single tooth; carpus and propodos with one or two setæ. Anterior gnathopoda pediform, the propodos tapering distally. Posterior gnathopoda imperfectly subcheliform; the carpus and propodos long and narrow (longer in the female than in the male), the short dactylos situated at a little distance from the extremity of the propodos. Anterior pereipoda subequal. Pereiopoda of the third pair much shorter than the fourth and fifth; bases of fifth pair broad, finely serrated along the posterior margin. Last pair of pleopoda short. Telson consisting of a disc-like, dorsally-concave plate, bordered with hairs, and cleft in the middle line posteriorly. Colour usually dark slate, occasionally dull yellow. Length 5½ lines.

N. S. Wales, in woods and scrubs.

392. Talitrus affinis. A.M.

Talitrus affinis, Haswell, l. c., vol. v., p. 97, pl. v., fig. 1.

Distinguished from *T. sylvaticus*, which it otherwise very closely resembles, by the form of the posterior gnathopoda—the meros having a truncate process below, the carpus having its

lower border convex, and the propodos having a longitudinal, hairy ridge.

Tasmania (K. Broadbent.)

Genus TALORCHESTIA, Dana.

Differs from *Talitrus* in having the first pair of gnathopoda subcheliform in the male, as in *Orchestia*, and the second developed largely, as in the male of *Orchestoidea* and *Orchestia*, whereas in the female the first gnathopoda are simple as in *Talitrus*, and the second feeble and unimportant as in the normal *Talitri*.

393. Talorchestia diemenensis.

Talorchestia diemenensis, Haswell, l. c., vol. iv., p. 248, pl. vii., fig. 6.

Superior antennæ equalling the cephalon in length. Inferior antennæ equal in length to the cephalon and first three segments of the pereion, the third joint short, the fifth the longest; flagellum subequal with the peduncle, fringed with short hairs. Anterior gnathopoda in the male with the carpus broad distally, the propodos quadrangular, twice as long as broad, the palmar border transverse, slightly sinuous, the dactylos short; in the female with both carpus and propodos narrower than in the male. the palmar border with a deep mesial notch, the dactylos well-developed. Posterior gnathopoda in the male large, the propodos compressed, irregularly cordiform, with the palm oblique, defined by a rounded tooth; in the female small, imperfectly subcheliform, the propodos narrow, nearly thrice as long as broad, parallel-sided, with the palm oblique, the dactylos rudimentary. Pereiopoda setiferous; third pair much shorter than fourth and fifth. Telson triangular, blunt. Length 3 lines.

Tasmania (Macleay Museum).

394. Talorchestia quadrimana. A.M.

Orchestia quadrimana, Dana, Proc. Amer. Acad. Sci. Bost. ii., 204; U.S. Exploring Exped. Crust. ii., p. 879, pl. lix., fig. 7; Spence Bate, Cat. Amph., p. 31, pl. v., fig. 3.

Talorchestia quadrimana, Haswell, l. c., vol. iv., p. 248, pl. vii., fig. 3, and vol. v., p. 100, pl. 6, fig. 1.

Male.—Coxæ deep. Eyes large, round. Inferior antennæ exceeding in length the cephalon and two first segments of the

pereion; peduncle and flagellum subequal, the fifth joint of the former longer than the fourth. Superior antennæ equalling in length the third and fourth segments of the peduncle of the inferior pair. Mandibles very powerful, resembling in general form those of *Talitrus sylvaticus*, the cutting edge with several strong curved teeth, between which and the grinding tubercle are seven slender ciliated spines; the molar tubercle broad, crossed by numerous very fine, acute transverse ridges. Maxillipedes non-unguiculate, the edges of the two terminal segments and of the lateral plates armed with numerous setæ. Anterior gnathopoda subchelate, carpus and propodos subequal, armed with setæ; propodos subtriangular, palm transverse, hairy, defined by a rounded elevation, superior border with five setiferous serrations. Posterior gnathopoda with the propodos large, varying in size; usually about four times as long as that of the anterior pair, sub-quadrate, the palm transverse, excavated, armed with a few minute teeth. First pair of pereiopoda rather longer than the second; third pair much shorter than fourth and fifth; fifth the longest, its basos much broader than that of the others; three posterior pairs armed with setæ, set on lateral serrations. Posterior pleopoda with the ramus slender. Telson triangular, blunt, cleft.

Female.—Anterior gnathopoda subpediform, the propodos narrowing distally, its superior border serrated, setiferous, its lower border setiferous, entire. Posterior gnathopoda with the carpus and propodos narrow, the dactylos rudimentary, not reaching to the extremity of the propodos. Colour white, with irregular light-red spots. Length 6 lines.

Found on most sandy beaches on the coast of New South Wales (Manly, Bondi, Kiama), under masses of decaying seaweed above the reach of ordinary tides.

395. Talorchestia limicola.

Talorchestia limicola, Haswell, l. c., Vol. v., p. 98, pl. v., fig. 2.

Male.—Superior antennæ as long as the cephalon and first segment of the perion, flagellum as long as the last two segments of the peduncle, of five articuli. Inferior antennæ four times as long as the superior pair, peduncle and flagellum sub-equal, the latter consisting of twelve articuli. Anterior gnathopoda having

the carpus produced below into a rounded prominence, the propodos sub-quadrate, broader distally than proximally, palm transverse; dactylos well-developed. Posterior gnathopoda with the propodos large, sub-quadrate, broader distally than proximally; palm transverse, armed externally with two rounded teeth, separated by a deep excavation from the rest of the palmar border; dactylos powerful, pointed, as long as the palm, provided internally with a rounded protuberance.

Female.—Anterior gnathopoda with the carpus and propodos of nearly equal length, the former sub-triangular; the propodos long-ovate, with two hair-armed serrations on its upper and lower borders; dactylos two-thirds of the length of the propodos, acuminate. Posterior gnathopoda small, carpus and propodos sub-equal; the latter with an obscure, downwardly projecting process at its distal extremity; dactylos short, articulating near the middle of the lower border of the propodos, and not nearly attaining the distal extremity of the latter. Length $\frac{7}{10}$ in.

Mangrove swamps, near Bowen, Queensland, under decaying wood, etc.

396. Talorchestia terræ-reginæ. A.M.

Talorchestia terræ-reginæ, Haswell, l. c., Vol. v., p. 99, pl. v., fig. 4.

Male.—Superior antennæ rather longer than the cephalon; flagellum as long as the last two segments of the peduncle, of six to eight articuli. Inferior antennæ more than four times as long as the superior pair; flagellum as long as the last segment of the peduncle, of about twenty articuli. Anterior gnathopoda with the carpus longer than the propodos, the latter slightly curved downwards, narrow, of nearly uniform breadth from end to end, slightly dilated at the infero-distal angle; palm transverse; dactylos longer than the palm. Posterior gnathopoda with the propodos large, heart-shaped, the palm oblique, armed with short bristles, and provided near the distal end with a prominent, compressed, curved process, which lies in an open hollow of the opposed border of the dactylos when the hand is closed.

Female.—Anterior gnathopoda with the carpus longer than the propodos, both narrow and armed with a few stout setæ. Posterior gnathopoda with the propodos provided with a short

rounded projection directed upwards, at the distal end of its dorsal border; extremity of dactylos scarcely reaching the distal extremity of the propodos. Length $\frac{2}{3}$ in.

Port Denison, Queensland, on sandy beach.

397 Talorchestia marmorata. A.M.

Talorchestia marmorata, Haswell, l. c., p. 99, pl. v., fig. 3.

Male.—Superior antennæ longer than the cephalon; flagellum rather longer than the last segment of the peduncle, composed of five articuli. Inferior antennæ rather more than three times as long as the superior pair; peduncle stout; flagellum as long as the peducle, composed of about seventeen articuli. Anterior gnathopoda with the carpus sub-triangular, its infero-distal angle produced into a compressed, rounded process; the propodos subequal with the carpus, much broader distally than proximally, the infero-distal angle produced and rounded; the palm transverse, armed with short setæ; the dactylos well-developed, shorter than the palm. Posterior gnathopoda large; carpus minute, propodos heart-shaped, the palm oblique, armed with numerous short setæ, and defined by a minute acute tooth. Pereiopoda very thick, base of last pair not dilated behind. The whole of the integument very hard. Colour marbled red and white. Length $\frac{3}{10}$ in.

398. Talorchestia pravidactyla. A.M.

Talorchestia pravidactyla, Haswell, l. c., pl. v., fig. 5.

Male.—Superior antennæ scarcely so long as the cephalon and the first segment of the pereion; flagellum as long as the last two segments of the peduncle, composed of seven articuli. Inferior antennæ more than three times as long as the superior pair; last segment of the peduncle more than twice as long as the penultimate; flagellum as long as the last segment of the peduncle, of 21 articuli. Anterior gnathopoda with the propodos broader distally than proximally, the infero-distal angle produced into a short narrow process; palm transverse, concave; dactylos acute, rather longer than the palm. Posterior gnathopoda having the propodos large, heart shaped, the palm oblique, defined by a blunt tooth, with a second tooth close to it on the distal side, and a rounded elevation about the middle; dactylos geniculate, its apex lying between the two palmar teeth when the hand is closed. Last pair of pereiopoda with the basos dilated posteriorly.

Female.—Inferior antennæ much smaller than in the male. Anterior gnathopoda with the carpus much longer and broader than the propodos, the latter about twice as long as broad, rather narrower at its distal than at its proximal end. Posterior gnathopoda with the propodos narrow, thrice as long as broad, the dactylos very short, inserted nearer the distal end than the middle of the ventral border of the propodos.

Tasmania (Australian Museum.)

Genus Orchestia, Leach.

Distinguished from *Talorchestia* by having the first pair of gnathopoda subcheliform in both sexes.

399. Orchestia capensis.

Orchestia capensis, Dana, Explor. Exped., Crust. ii., p. 866, pl., 58, fig. 3, (1852), Spence Bate, Cat. Amphip., p. 23, pl. iv., fig. 2, (1862.)

Male.—Eyes rather large. Upper antennæ reaching to the extremity of the penultimate joint of the peduncle of the lower. Lower antennæ half as long as the animal; the flagellum not longer than the last joint of the peduncle, which joint is nearly as long again as the penultimate. First pair of gnathopoda with the palm indented or concave, and no tubercle on the carpus, dactylos longer than the palm and incurved. Propodos of second pair of gnathopoda well developed, and the palm deeply concave. Third pair of pereiopoda shorter than the fourth, robust. The basos of the three posterior pereiopoda disk-shaped. [*D.*]

Australia. Found also at the Cape of Good Hope.

400. Orchestia dispar.

Orchestia dispar, Dana, U. S. Explor. Exped., Crust., ii., p. 878, pl. lix., fig. 6; Spence Bate, Cat. Amphip., p. 32, pl. v., fig. 5.

Male.—Coxæ of moderate size, fifth but little shorter than fourth. Inferior antennæ scarcely half as long as body; last two joints of base subequal; flagellum longer than base; joints hardly oblong; setæ not longer than half the diameter of the joints. Superior antennæ shorter than base of inferior. First pair of gnathopoda having the propodos quite small, broadest at

apex, and obliquely truncate, with the apical margin excavate. Propodos of second pair stout, broad, subelliptical, obliquely subtruncate; palm of the propodos a little sinuous, pubescent. First pair of pereiopoda longer than second; fifth a little shorter than fourth, and *having the meros and carpus stout, very broad*, and much compressed; setæ very short, on propodos about as long as semi-diameter of the joint. [*D.*]

Illawarra, New South Wales (Dana).

401. **Orchestia Macleayana.**

Orchestia Macleayana, Haswell, l. c., Vol. iii., p. 250, pl. vii., fig. 2.

Male.—Inferior antennæ as long as the cephalon and first four segments of the pereion; the peduncle stout and longer than the flagellum. Superior antennæ about one-third of the length of the inferior pair, slightly exceeding the cephalon in length; flagellum and peduncle subequal. Anterior gnathopoda with the carpus triangular, longer than the propodos; the propodos broader at its distal than at its proximal end, the palm transverse. Posterior gnathopoda with the propodos large, cordiform, thrice as long as that of anterior pair; palm oblique, undefined, waved. First pair of pereiopoda longer than second. Second pair with the meros broader than that of first pair. Three posterior pairs increasing progressively in length, the fourth pair much longer than the third, and the fifth slightly longer than the fourth; basos of the fifth with a tooth on its posterior margin. Posterior pleopoda short. Telson triangular, blunt.

Female.—Posterior gnathopoda with the propodos shorter than the carpus, oval; dactylos rudimentary.

Length 4½ lines.

Sandy beaches, Port Jackson; Kiama, New South Wales; found among decaying sea-weed.

Genus Allorchestes, Dana.

Superior antennæ as long as the peduncle of the inferior, the basal articulations imperfectly fused into the facial wall of the cephalon. Olfactory spine rudimentary. Mandibles without an appendage. Maxillipedes furnished with a pointed dactylos. Both pairs of gnathopoda subcheliform. [*S. B.*]

402. Allorchestes Gamardii.

Amphithoë Gaimardii, Edw., Hist. Nat. Crust., iii., p. 37.

Allorchestes Gaimardii, ? Dana, U.S. Explor. Exped., Crust., ii., p. 884, pl. lx., fig. 1; Spence Bate, Cat. Amph., p. 41, pl. vi., fig. 9.

Eyes oval. Superior antennæ three-fourths as long as the inferior. Inferior antennæ about half as long as the animal; the peduncle twice as long as the flagellum, one-half of which is fused into one articulation, and resembles an extra articulation attached to the peduncle. First pair of gnathopoda having the propodos and carpus equally short and stout, the palm but slightly receding and nearly one-third longer than the dactylos, which is robust and curved; it impinges at the apex against four short, strong, small, blunt spines, which are situated laterally. Second pair of gnathopoda having the propodos much longer than the first; it is ovate, long, and tapering towards the extremity, the palm being two-thirds the length of the inferior margin. [*S. B.*]

Illawarra (Dana).

403. Allorchestes humilis.

Allorchestes humilis, Dana, U. S. Explor. Exped., Crust., ii., p. 890, pl. lx., fig 6; Spence Bate, Cat. Amphip., p. 45, pl. vii., fig. 5.

Female. ?—Superior antennæ a little shorter than the inferior, flagellum six to eight-jointed. Inferior pair about one-third as long as body; flagellum nine to ten-jointed, joints a little oblong, setæ all very short. Propodos of first pair of gnathopoda small, oblong, a little smaller at base, oblique at apex. Propodos of second pair of same form, and not twice as long, inferior margin slightly emarginate; palm oblique, transverse, hirsute; dactylos short. Last four feet nearly equal, fifth pair a little shorter; setæ few, very short; first joint nearly orbicular; posterior margin slightly crenulate. Maxillipedes with the penult joint narrow. [*D.*]

Port Jackson (Dana).

404. Allorchestes Australis.

Allorchestes Australis, Dana, U. S. Explor. Exped., Crust., ii., p. 892, pl. lx., fig. 7.

Superior antennæ a little shorter than the inferior; flagellum longer than base; about fourteen-jointed, joints towards base transverse. Inferior antennæ less than half the body in length; flagellum rather longer than base, twelve to fourteen-jointed, joints mostly oblong, setæ nearly obsolete. Propodos of first pair of gnathopoda quite small, but little oblong, much narrower at base than at apex, nearly directly truncate at apex; dactylos not longer than breadth of propodos. Propodos of second pair of gnathopoda large, subovate, palm compressed, posterior angle with a few minute setæ; carpus produced into a narrow process between the propodos and the fourth joint. Three posterior pairs of pereipoda gradually increasing in length, third joint quite broad, setæ very short. [*D.*]

Illawarra (Dana).

405. Allorchestes rupicola.

Allorchestes rupicola, Haswell, l. c., Vol. iv., p. 250, pl. viii., fig. 1.

Eyes large, subreniform. Superior antennæ as long as the cephalon and two first segments of the pereion; third segment of the peduncle short; flagellum longer than peduncle. Inferior antennæ as long as the cephalon and first three segments of the pereion; flagellum and peduncle subequal. Anterior gnathopoda of moderate size, the carpus with a projecting ciliated process on its inferior border; the propodos ovoid; palm oblique, convex, defined by a blunt tooth. Posterior gnathopoda large; the propodos more than twice as long as that of the anterior pair, ovate, its proximal border with a deep notch, its superior border strongly convex, palm scarcely oblique, convex, armed with an obscure tooth. Pereiopoda of the two anterior pairs subequal. Three posterior pairs of pereiopoda increasing progressively in length from before backwards. Posterior pleopoda short. Telson nearly semicircular, divided. Length 4½ lines.

Shallow rock-pools a little above high-water mark, Clark Island, Port Jackson; Botany Bay.

406. **Allorchestes longicornis.**

Allorchestes longicornis, Haswell, l. c., Vol. iv., p. 251, pl. vii., fig. 4.

Inferior antennæ as long as the cephalon and the whole of the pereion; third segment of peduncle short; fifth the longest; flagellum more than twice as long as the peduncle. Superior antennæ with the peduncle as long as the third and fourth segments of the peduncle of the inferior pair; first and second joints subequal; third smaller; flagellum twice as long as the peduncle. Anterior gnathopoda with the carpus sub-triangular, having a small hairy process on its ventral aspect; the propodos equal in length to the carpus, rather longer than broad, its dorsal border nearly straight, its palmar border strongly convex; palm oblique, defined by a small tooth. Posterior gnathopoda with the propodos twice as long as that of the anterior pair, heart-shaped, nearly twice as long as broad; palm nearly longitudinal, defined by a sharp tooth. Third pair of pereiopoda much shorter than the fourth and fifth. Length about 5 lines.

Kiama, New South Wales, under large stones between tide marks.

407. **Allorchestes crassicornis.**

Allorchestes crassicornis, Haswell, l. c., p. 252, pl. vii., fig. 5.

Inferior antennæ as long as the cephalon and first three segments of the pereion; peduncle stout; third segment much longer than the others; flagellum very stout, rather longer than the peduncle. Superior antennæ exceeding in length the first and second segments of the peduncle of the inferior pair; the segments of the peduncle all of nearly equal length, the third slightly shorter than the other two; flagellum half as long again as the peduncle. Anterior gnathopoda with the carpus sub-triangular, having a short hair-bordered process on its ventral aspect; the propodos oblong, twice as long as broad, palm transverse, not defined. Posterior gnathopoda with the propodos two-and-a-half times as long as that of the anterior pair; palm oblique, defined, armed with a row of short spines. Third pair

of pereiopoda shorter than the others; fourth and fifth pairs subequal. Length about 5 lines.

Kiama, New South Wales, between tide-marks.

408. **Allorchestes niger.**

Allorchestes niger, Haswell, l. c., Vol. iv., p. 319.

Eyes round. Superior antennæ nearly as long as the cephalon and the first two segments of the pereion; first joint of peduncle short, about half the length of the cephalon; second and third shorter; flagellum of nine articuli. Inferior antennæ twice as long as the superior pair; flagellum much longer than peduncle, the articuli nearly twice as broad as long at the proximal end, becoming narrower and longer towards the extremity; setæ few and short. Anterior gnathopoda with a lamellar, hair-bordered process on the carpus; propodos ovoid, twice as long as broad, palm short, oblique, with a defining spine. Posterior gnathopoda with the carpus small, triangular; the propodos irregularly heart-shaped with the palm oblique, defined by a triangular tooth, and armed with a row of spines; the dactylos with a small tooth at its base on the inner side. Pereiopoda subequal, with a few setæ on the borders of the segments. Colour blackish purple or brown. Length ¼ in.

Among sea-weed on Clark Island, Port Jackson.

Genus ASPIDOPHOREIA, Haswell.

Coxæ of the posterior gnathopoda and of the first and second pairs of pereiopoda greatly expanded, deeper than the respective segments, those of the three last pairs of pereiopoda small, that of the third pair bilobed—the posterior lobe larger than the anterior. Antennæ simple; the superior pair shorter than the inferior. Mandibles without an appendage. Maxillipedes with a pointed dactylos. Gnathopoda sub-chelate—the posterior pair much larger than the anterior. Posterior pleopoda uniramous—the ramus uniarticulate. Telson squamiform, cleft to the base.

This genus differs from *Stenothoë*, Dana, in having the ramus of the last pair of pleopods uniarticulate; in most of its characters it approaches *Allorchestes*—being distinguished from that genus only by the largely developed anterior coxæ, and the character of the telson.

409. Aspidophoreia dimenensis. A.M.

Aspidophoreia dimenensis, Haswell, l c., Vol. v., pl. vi., fig. 2.

Superior antennæ as long as the cephalon and the first segment of the pereion, rather longer than the peduncle of the inferior pair; flagellum longer than the peduncle, of about twenty articuli. Inferior antennæ with the peduncle stout, the fourth joint the largest; flagellum slightly shorter than the peduncle, of about twenty articuli. Anterior gnathopoda with the carpus sub-triangular in outline; the propodos larger than the carpus, irregularly triangular, palm transverse, deeply concave. Posterior gnathopoda large; propodos heart-shaped, palm oblique, armed with short bristles. Basa of three posterior pairs of pereiopoda broad, that of the fifth pair much expanded behind; their anterior borders serrate and armed with setæ, the posterior border smooth. Ramus of last pair of pleopoda short, conical, acute. Telson consisting of two quadrangular scales, separated by a linear fissure. Surface (in the spirit specimen) ornamented with numerous, very minute, white dots, arranged in clusters of three or four. Length ⅛ in.

Tasmania.

Family II. GAMMARIDÆ.

Superior antennæ well developed. Inferior antennæ inserted in a notch at the infero-anterior angle, and not fused with the cephalon. Maxillipedes unguiculate. Coxæ largely developed and squamiform.

Sub-Family Stegocephalides.

Superior and inferior antennæ subequal. Coxæ of the second pair of gnathopoda and of the first and second pairs of pereiopoda monstrously developed; second pair broader than the preceding. Pereiopoda subequal. Last three pairs of pleopoda styliform. Telson single. [*Sp. B.*]

Genus MONTAGUA, Spence Bate.

Superior antennæ as long as the inferior, and not furnished with a secondary appendage. Mandibles not furnished with an appendage. Maxillipedes pediform, unguiculate, and without, or with only rudimentary squamiform plates. First pair of

gnathopoda small, subchelate, the coxæ not developed into a squamiform plate. Second pair of gnathopoda larger than the first, with the coxæ very large, squamiform, deeper than the body; and produced anteriorly so as to cover the organs of the mouth. Pereiopoda subequal; coxæ of the two anterior pairs very largely developed, deeper than the body, and produced posteriorly so as to cover that of the following pair of pereipoda. Posterior pleopoda styliform, unibranched, the ramus biarticulate. Telson simple and squamiform.

410. **Montagua Miersii.**

Montagua Miersii, Haswell, l. c., Vol. iv., p. 323, pl. xxiv., fig. 4.

Coxæ of the posterior gnathopoda and the two first pairs of pereiopoda much deeper than their respective segments. Superior and inferior antennæ subequal in length, equal in length to the cephalon and first three segments of the pereion; the peduncles stout, rather shorter than the flagella. Anterior gnathopoda small, the propodos subquadrate, the palm nearly transverse. Posterior gnathopoda with the propodos large, cordiform; the palm oblique, undefined. Pereiopoda subequal, rather stout. Colour yellow with brown markings. Length about $\frac{3}{10}$ in.

Port Jackson.

411. **Montagua longicornis.**

Montagua longicornis, Haswell, l. c., Vol. iv., p. 323, pl. xxiv., fig. 5.

Coxæ scarcely so deep as in the preceding species. Superior antennæ as long as the cephalon and pereion. Inferior antennæ a little shorter than the superior. Anterior gnathopoda with the propodos very small, subquadrate, the palm nearly transverse. Posterior gnathopoda with the propodos long-ovate; palm undefined; fringed with long hairs. Length about $\frac{3}{10}$ in.

Port Jackson.

Genus STEGOCEPHALUS, Kröyer.

Cephalon short. Antennæ short; superior pair furnished with a secondary appendage. Mandibles without an appendage, with a secondary plate only on the left mandible. Maxillipedes having the second and third joints produced into a squamiform

plate. Gnathopoda not subchelate. Coxæ of the gnathopoda and the two anterior pairs of pereiopoda very large. The three posterior pairs of pleopoda uniform. Telson squamiform, cleft.

412. Stegocephalus latus.

Stegocephalus latus, Haswell, l. c., Vol. iii., p. 252, pl. viii., fig. 2.

Cephalon short, about half as long as first segment of pereion. Pereion dilated. Pleon slightly compressed. Superior antennæ as long as the cephalon and first segment of the pereion; first joint of peduncle compressed; third joint longer than second; flagellum as long as third joint of peduncle, composed of few (seven or eight) articuli; appendage very short. Inferior antennæ nearly as long as the superior; flagellum very short, of six articuli. Gnathopoda sub-pediform, similar; anterior pair with the basos much shorter than that of the posterior pair; both hairy, with the carpus and propodos of equal length, the former sub-triangular, the latter narrow. Posterior pereipoda with the meros produced and pointed at its postero-distal angle, and the carpus rather short, with two teeth at its distal extremity. Three posterior pairs of pleopoda stout; the rami of all three equal, short. Telson small, squamiform, slightly cleft.

Tasmania.

Genus AMARYLLIS, Haswell.

Superior antennæ with a well-developed appendage. Mandibles with a palp. Maxillipedes with well-developed squamiform plates. Anterior gnathopoda sub-pediform. Posterior gnathopoda imperfectly subchelate. Rami of the fourth and fifth pleopoda styliform; those ot sixth pair broad-lanceolate. Telson squamiform, cleft.

413. Amaryllis macrophthalmus

Amaryllis macrophthalmus, Haswell, l. c., Vol. iii., p. 253, pl. viii., fig. 3.

Eyes vertically elongated, sub-crescentic. Superior antennæ equal in length to the cephalon and first five segments of the pereion; first joint of the peduncle as long as the cephalon; second and third joints short; flagellum longer than peduncle, of about thirty segments; appendage of seven segments. Inferior

antennæ with the peduncle nearly equal in length to that of superior pair; flagellum longer than peduncle. Mandibles with a three-jointed palp; cutting edge produced at each end; a pointed tubercle on the outer border in front of the insertion of the palp; squamiform plate bordered with short spines. First pair of maxillæ having the two internal plates armed with a number of compressed chitinous teeth, each furnished at its extremity with a series of denticulations. Palp of maxillipedes non-unguiculate. First pair of gnathopoda slender; the carpus and propodos narrow, the latter tapering towards its distal end. Second pair rather stouter; carpus cylindrical; propodos long, narrow, its lower border convex, its upper straight; palm transverse, dactylos short. Anterior pereipoda subequal. Meros, carpus and propodos of posterior pereiopoda serrated. Rami of fourth and fifth pairs of pleopoda styliform, slightly curved at the extremity, the inner ramus of the fifth pair rather longer and broader than the outer. Sixth pair of pleopoda a little shorter than fifth; the rami lanceolate, with smooth borders and slightly curved at the tip. Telson squamiform, deeply cleft.

Tasmania (Macleay Museum.)

414. Amaryllis brevicornis. A.M.

Amaryllis brevicornis, Haswell, l. c., p. 254.

This species is nearly allied to the preceding, being distinguished from it mainly by the greater shortness of the antennæ, which are not longer than the cephalon and first three segments of the pereion; the flagellum of the superior pair containing only eighteen articuli, and the appendage five.

Port Jackson; Port Stephens; Griffiths' Point, Western Port.

Genus NEOBULE, Haswell.

Superior antennæ simple. Mandibles without an appendage. Maxillipedes with a squamiform process on the basos only. Gnathopoda subchelate; second pair the larger; coxæ of anterior pair well-developed. Fourth pair of coxæ wide, excavated behind to receive the anterior part of the fifth pair. Posterior pleopoda biramous. Telson squamiform.

415. **Neobule algicola.**

Neobule algicola, Haswell, l. c., p. 255, pl. viii., fig. 4.

Eyes round. Superior antennæ as long as the cephalon and first two segments of the pereion; first segment of the peduncle longer and stouter than the others; third scarcely distinguishable from the articuli of the flagellum; flagellum rather longer than peduncle. Inferior antennæ equal in length to the superior pair; peduncle and flagellum subequal. Anterior gnathopoda with the carpus sub-triangular; the propodos longer than the carpus, oblong; the palm transverse, concave. Posterior gnathopoda with the propodos similar in shape to that of the anterior pair, but larger. Third pair of pereiopoda shorter than the fourth and fifth; fifth pair longer than the fourth, its basos broader than that of the preceding pairs. Rami of posterior pleopoda extremely short. Telson small, entire.

Kiama, Illawarra.

Sub-Family Cyproidides.

Coxæ of gnathopoda very small. Coxæ of the first and second pairs of pereiopoda very large. Coxæ of the third and fourth pereiopoda small.

Genus CYPROIDIA, Haswell.

Body broad. Pereion and pleon of equal length. Coxæ of gnathopoda very small. Coxæ of the first and second pairs of pereiopoda enormously developed; and cemented together to form broad and deep lateral shields, concealing almost entirely the gnathopoda and pereiopoda, and extending forwards to the sides of the cephalon, and backwards as far as the posterior border of the sixth segment of the pereion, excavated posteriorly for the shallow coxæ of the third pereiopoda. Coxæ of the last two pairs of pereipoda very small.* Antennæ subequal, superior without an appendage. Mandibles with a palp. Maxillipedes unguiculate; both basos and ischium armed with small squamiform plates. Gnathopoda subcheliform. Pereipoda slender. Posterior pleopoda biramous. Telson single.

* The coxæ of the third and fourth pereiopoda are not amalgamated, as erroneously stated in the original description, but that of the fourth pair is entirely rudimentary and covered by that of the third.

416. Cyproidia ornata. A.M.

Cyproidia ornata, Haswell, l. c., Vol. iv., p. 320, pl. xviii. fig. 1.

Cephalon with a slight rostral prolongation. Eyes round. Superior antennæ nearly as long as the cephalon and the first two segments of the pereion; first segment of the peduncle stout, half as long as the cephalon; second segment longer and narrower than the first, ending distally in an upper, longer, and a lower, shorter, blunt tooth; third segment similar to the articuli of the flagellum; flagellum equal in length to the peduncle. Inferior antennæ about equal in length to the superior pair, inserted considerably behind the latter; second joint of the peduncle the longest; flagellum shorter than the last segment of the peduncle, of four or five articuli. Mandibles with a three-jointed palp; the incisive edge armed with eight conical teeth. Maxillipedes with the dactylos long, pointed. Anterior gnathopoda having the carpus triangular, its distal and inferior angle produced and armed terminally with a few spines; propodos ovoid, narrowed distally, longer than the carpus, palm not defined; dactylos slender, acute, about two-thirds of the length of the propodos, its inner border armed in about a half of its extent with fine denticles. Posterior gnathopoda with the ischium, meros, and carpus, each produced distally and inferiorly; ischium short, its process longer than its body, gently curved, armed with one or two setæ; meros a little longer than the ischium, its process very short, armed at the extremity with a few setæ; carpus large, the infero-distal process longer than the body, pointed and nearly straight, armed internally with a row of setæ; propodos a little longer than the process of the carpus, oblong, twice as long as broad; dactylos short, stout. Pereiopoda subequal, slender, the basa very narrow. Three posterior pairs of pleopoda biramous, devoid of setæ, the rami styliform, slender, pointed and slightly curved. Telson sub-conical, laterally compressed, subacute. Colour light pink, with minute brown and red dots forming a lobed pattern on the coxæ. Length $\frac{3}{10}$ in.

Port Jackson; Port Stephens.

417. Cyproidia lineata. A.M.

Cyproidia lineata, Haswell, l. c., p. 321, pl. xviii., fig. 2.

Body very convex. Lateral plates rather deeper than the pereion; the division between the two constituent coxæ geniculate.

Cephalon with a slight rostral prolongation. Posterior segments of the pleon compressed. Eyes large, round, red. Superior antennæ as long as the cephalon and the first three segments of the pereion; peduncle stout, the second segment produced above into a strong tooth at the distal end; flagellum longer than the peduncle, tapering, of about seven articuli. Inferior antennæ rather longer than the superior pair; peduncle and flagellum subequal. Anterior gnathopoda with the propodos oblong, more than twice as long as broad, the palm oblique, short, armed with a few very short hairs. Posterior gnathopoda with the carpus produced infero-distally into a prominent, distally-rounded process, armed terminally with a few hairs; propodos ovate, narrowed distally, palm oblique, defined by the distal process of the carpus, armed with a few short bristles. Pereiopoda subequal, slender. Last three pairs of pleopoda successively decreasing in length posteriorly; rami short, pointed, unarmed. Telson very large, laterally compressed, blade-like, nearly as long as the last pair of pleopoda, the upper border convex, the lower nearly straight. Ornamented with numerous brown dots disposed in lines on the lateral shields and the body. Length about $\frac{1}{10}$ in.

Port Jackson.

Sub-Family Lysianassides.

Superior antennæ usually very short, thick at the base, and suddenly tapering. Coxæ of the four anterior pairs of appendages very deep, the fourth not broader than the preceding.

Genus Lysianassa, Milne-Edwards.

Superior antennæ pyriform, very short, stouter than the inferior, and furnished with a secondary appendage. Mandibles having an appendage; the incisive edge not furnished with teeth; armed upon the anterior margin with a stout tubercle; secondary or movable plate wanting. Maxillipedes with large squamiform processes attached to the third and fourth joints. First pair of gnathopoda not subchelate; second pair subchelate, imperfectly developed, long and membranous. Ischium and carpus long. Dactylos rudimentary. Coxæ of the gnathopoda and the two anterior pairs of pereiopoda deeper than their respective segments; those of the second pair of pereiopoda produced inferiorly

and posteriorly. Coxæ of the fourth pair much shorter than the third. Pereiopoda subequal. Posterior pair of pleopoda double-branched. Telson single, squamiform, entire.

418. **Lysianassa nitens.** Plate iv., fig. 1.

Lysianassa nitens, Haswell, l. c., p. 255, pl. viii., fig. 5.

Eyes rather small. Superior antennæ short, equalling in length the cephalon and the first segment of the pereion; flagellum about half as long as the peduncle, of ten articuli; appendage of six articuli. Inferior antennæ subequal with superior pair; peduncle stout, sub-cylindrical, not compressed; flagellum rather longer than the peduncle. Anterior gnathopoda stout, pediform. Posterior gnathopoda much more slender than the anterior pair; propodos nearly twice as long as broad; palm transverse, excavated; dactylos short. Pereiopoda subequal, short and rather stout. Rami of posterior pleopoda lanceolate, both bordered with hairs on one margin. Telson simple. Colour pearly white. Length 3 lines.

Port Jackson. Common among sea-weed, etc., in the sublittoral zone.

This species is allied to *L. Kröyeri*, but has the carpus and propodos of the second gnathopoda broader.

419. **Lysianassa affinis.** Plate iv., fig. 2.

Lysianassa affinis, Haswell, l. c., p. 255.

Nearly allied to the preceding; distinguished from it by the length of the inferior antennæ which are longer than the body, and by having the eyes very large, meeting above.

Port Jackson.

420. **Lysianassa australiensis.**

Lysianassa australiensis, Haswell, l. c., Vol. iv., p. 323, pl. xviii., fig. 3.

Resembles *L. nitens*, mihi, but has the eyes smaller, and the propodos of the posterior gnathopoda narrower, with the dactylos rudimentary.

421. **Lysianassa Kröyeri.**

Ephippiphora Kröyeri, White, Ann. and Mag. Nat. Hist. (2), Vol. i., p. 226 (1848), and Zool. "Erebus and Terror," pl. v.

Lysianassa Kröyeri, Sp. Bate, Cat. Amphip., p. 65, pl. x., fig. 4; G. M. Thomson, Trans. N. Z. Inst., Vol. xi., p. 237 (1879).

Animal not much compressed, smoothly arcuate; a dorsal spine in the fourth segment of the pleon. Eyes reniform. Superior antennæ having the first joint of the peduncle reaching scarcely beyond the ocular process of the cephalon, the second and third joints very short; the flagellum not longer than the peduncle. Inferior antennæ three times as long as the superior, the peduncle not extending beyond the peduncle of the superior pair. First pair of gnathopoda having the propodos nearly three times as long as the carpus, and armed on the under side with a strong curved spine near the base of the dactylos. Second pair of gnathopoda having the propodos a little shorter than the carpus, and both inferiorly covered with minute denticles; the propodos furnished upon the superior margin with tufts of long hair; serrated on both margins, palm short, inferior angle produced into a tubercle; dactylos not so long as the palm. Coxæ of the second pair of pereiopoda having the lower half of the posterior margin greatly produced. Posterior pair of pleopoda having the rami much longer than the basal articulation. [*S. B.*]

Tasmania. Found also in New Zealand.

Genus GLYCERINA,* Haswell.

Superior antennæ slender, rather long, provided with an appendage. Mandibles with a palp, the incisive edge not toothed; no accessory plate; anterior margin with a prominent tubercle. Maxillipedes with large squamiform processes on the basal joints. Four anterior pairs of coxæ deeper than their respective segments; the fourth pair slightly produced inferiorly and posteriorly. Gnathopoda filiform, slender; anterior pair smaller than the posterior, imperfectly subchelate; posterior pair subchelate. Posterior pleopoda biramous; the rami broad-lanceolate. Telson double.

* Altered from *Glycera*.

422. **Glycerina tenuicornis.** Plate iv., fig. 3. A.M.

Glycera tenuicornis, Haswell, l. c., Vol. iii., p. 257, pl. viii., fig. 6.

Eyes long-oval, nearly meeting above. Superior antennæ as long as the cephalon and first three segments of the pereion, first joint of peduncle very stout, longer than the others, second and third joints very short; flagellum longer than peduncle, slender; appendage nine-jointed. Inferior antennæ longer than the superior pair; peduncle subequal with that of the latter; flagellum thrice as long as the peduncle. Anterior gnathopoda long, filiform; basos narrow, compressed; ischium, meros and carpus all sub-cylindrical and slender; propodos about one-third of the length of the carpus, irregularly ovoid, narrowed distally, its ventral border armed with curved setæ. Posterior gnathopoda elongated, slender, but stouter than the anterior pair; propodos nearly twice as long as carpus, sub-quadrate, nearly as broad as long, the palm concave, the ventral and distal angle prominent, acute. Third pair of pereiopoda much shorter than the rest; the basos circular, serrated posteriorly. Basos of following pairs oval, non-serrated; meros, carpus, and propodos hairy. Fourth and fifth pairs of pleopoda with the rami slender, styliform; rami of the last pair broad-lanceolate, acute. Lateral halves of the telson broad-lanceolate, pointed.

Howick Group, N. E. Australia; Port Jackson.

Sub-Family Ampeliscades.

Cephalon produced anteriorly, cone-shaped, the superior antennæ being placed at the apex. No compound eyes, but four small simple organs of vision. Gnathopoda more or less subchelate, not powerful. Coxæ deep, as also those of the first two pairs of pereipoda. [*S. B.*]

Genus Ampelisca, Kröyer.

Cephalon tapering anteriorly. Eyes four, minute, simple, situated near the anterior extremity of the cephalon. Superior antennæ simple, attached to the extremity of the cephalon. Inferior antennæ arising very far posterior to the base of the superior. Mandibles furnished with an appendage. Gnathopoda

imperfectly subchelate, First and second pairs of pereiopoda terminating in a styliform dactylos longer than the propodos; third and fourth pairs terminating in a short curved dactylos directed posteriorly. Three posterior pairs of pleopoda biramous. Telson squamiform, cleft. [*S. B.*]

423. **Ampelisca Australis.**

Ampelisca Australis, Haswell, l. c., p. 257, Vol. iii., pl. viii., fig. 3.

Superior antennæ as long as the cephalon and the first segment of the pereion; first joint of peduncle short, stout; second longer and narrower; third not distinguishable from the articuli of the flagellum; flagellum slender, composed of elongated articuli. Inferior antennæ about twice as long as the superior; third segment of the peduncle short, stout; fourth narrow and elongated (as long as the cephalon); fifth rather shorter than fourth; flagellum equal in length to the first two segments of the peduncle, of about ten slender articuli. Maxillipedes with the dactylos stout, as long as the propodos; the plate of the ischium furnished along its inner margin with a series of eight short, broad, compressed spines, succeeded towards the apex by long and slender spines. Gnathopoda non-subchelate; the anterior pair with the meros, carpus and propodos of nearly equal length, narrow, furnished with long simple hairs; posterior pair similar, but shorter and slightly stouter; dactylos two-thirds of the length of the propodos. Two anterior pairs of pereiopoda with the carpus very short, about one-fifth of the length of the meros; the propodos nearly twice as long as the carpus, narrower; the dactylos as long as the carpus and propodos, nearly straight. Posterior pereiopoda with the dactylos very small, directed backwards; meros of the third and fourth pairs shorter than the carpus; carpus and propodos subequal, fringed with long hairs; basos of last pair narrower than that of third and fourth, its posterior edge with a blunt projection, armed with long bristles; the meros very short and broad; the carpus longer than the meros and slightly narrower; the propodos shorter than the carpus, narrowed towards the dactylos, which is long, slender and slightly curved. Sixth pair of pleopoda longer than the fifth pair, with the rami broad-lanceolate, the outer armed on one border, and the inner on both with slender setæ,

the longest of which are about half the length of the ramus. Telson squamiform, cleft, rounded posteriorly. Length 4½ lines.

Port Jackson.

Sub-Family Phoxides.

Body laterally compressed. Cephalon produced in advance more like a hood than a rostrum. Superior antennæ situated considerably in advance of the inferior, which are not pediform nor armed with hooked spines. Integumentary structure generally thin and transparent. Three posterior pairs of pleopoda double-branched, the last pair without hook-like spines.

Genus PHOXUS, Kröyer.

Eyes very small. Superior antennæ with a complementary appendage; inferior antennæ as long as the superior. Mandible appendiculate. Maxillipedes subpediform. Both pairs of gnathopoda subchelate. Coxæ deeper than the respective segments. Posterior pair of pereiopoda shorter than the preceding. Telson double. [*S. B.*]

424. **Phoxus villosus.**

Phoxus villosus, Haswell, l. c., p. 258.

Rostrum as long as the remainder of the cephalon, blunt. Eyes small, oval. Superior antennæ equalling in length the cephalon and rostrum; first segment of the peduncle twice as long as broad, second scarcely two-thirds of the length of the first and much narrower, provided below with a fasciculus of short hairs; third joint half the length of the second, scarcely distinguished from the articuli of the flagellum; flagellum nearly as long as the peduncle; appendage nearly as long as the flagellum, of about fifteen articuli. Inferior antennæ rather longer than the superior pair; fourth joint of peduncle broad, its upper surface straight, its lower convex and provided with two ridges armed with longish hairs; fifth joint as long as the fourth and of similar shape, but narrower, armed with hair below; flagellum as long as the last two segments of peduncle. Coxæ fringed with slender hairs. Gnathopoda hairy. Anterior pair with the propodos ovoid, twice as long as broad; the palm

oblique, defined by a strong tooth. Posterior pair with the propodos similar to that of the anterior, but rather broader, with the palm slightly less inclined to the long axis of the propodos, and the defining tooth larger. Two anterior pairs of pereiopoda subequal, hairy, their meros and carpus broad. Three posterior pairs serrated and hairy, fourth pair much longer than the others, longer than the pereion; basa of third and fourth pairs armed much longer than broad; fifth pair very small, the basos dilated posteriorly, broader than long, its posterior margin armed with fine serrations. Rami of sixth pleopoda broad-lanceolate; outer longer and broader than inner, serrated; inner smooth; both armed with setæ. Telson with the halves broad, compressed, truncate, bordered with a few hairs. Length 7 lines.

Port Jackson.

425. **Phoxus Batei.**

Phoxus Batei, Haswell, l. c., p. 259, pl. ix., fig. 3.

Rostrum as long as the rest of the cephalon, straight, obtuse. Eyes distinct, long-oval. Superior antennæ with the peduncle extending beyond the extremity of the rostrum; first joint of the peduncle nearly as broad as long; second as long as the first, but of only about half the breadth; third joint about one-fourth of the length of the first; flagellum longer than the last two segments of the peduncle; appendage two-thirds of the length of the flagellum, consisting of about six articuli. Inferior antennæ rather longer than the superior; the penultimate joint of the peduncle broad, its superior border straight and smooth, its inferior border convex, serrate and hairy; last joint shorter and narrower than the penultimate, serrate, armed with hairs and with two slender spines; flagellum as long as the two last segments of the peduncle. Coxæ bordered with a few hairs. Gnathopoda similar, subequal; propodos twice as long as broad; palm very oblique, defined by an acute tooth. Two anterior pairs of pereiopoda subequal, stout. Fourth pair of pereiopoda longer than the third; fifth pair shorter, with the basos very broad, but scarcely so broad as long, serrate on its posterior border. Fourth and fifth pairs of pleopoda armed with short acute spines. Sixth pair with the rami unequal; the outer broad-lanceolate, truncate, serrate, bordered with hairs; the inner

about half as long as the outer, narrower, armed with long hairs. Halves of the telson slender. Length 4½ lines.

Port Jackson.

Genus ÆDICERUS, Kröyer.

Cephalon produced anteriorly into a rostrum more or less acute than obtuse, but always transparent, turgid, yellowish red, oval. Eyes none. ?. Peduncles of the antennæ long, equalling or surpassing in length the flagellum of the superior. Superior antennæ not appendiculated. Both pairs of gnathopoda subchelate, very large. First two pairs of pereiopoda strong, fifth pair very long, slight, almost filiform (except the basos). Coxæ moderately large, broad, and deep, armed upon the inferior margins with simple hairs. Posterior margin of the fourth pair not excavated. *(K. fide S. B.)*

426. Œdicerus fossor.

Œdicerus fossor, Stimpson, Proc. Acad. Nat. Sci. Philad., 1855; Spence Bate, Cat. Amphip., p. 373.

Body rounded above. Pleon with the third and fourth segments compressed and raised above into a sharp crest. Eyes black, round, and small. Antennæ subequal, with stout flagella forming half their length; each flagellum consisting of about eighteen articuli and having a serrated appearance from the produced spine-like inferior angle of each articulus. Gnathopoda subequal; propoda rather broadly ovate, dactyla about one-half as long as propoda. First and second pairs of pereiopoda having the propoda subovate or paddle-shaped, with the rounded extremity covered with hairs; dactyla about one-half as long as propoda. First and second pairs of pereiopoda having the propoda subovate or paddle-shaped, with the rounded extremity covered with hairs; dactyla obsolete; third and fourth pairs very short, with compressed, clavate, or cutlass-shaped dactyla. Coxæ of the third pair of pereiopoda very large, square. Three posterior pairs of pleopoda biramous, very hairy on their inner edges. Colour white, with a few blackish spots. [*S.*]

Botany Bay (Stimpson).

427. Œdicerus latrans.

Œdicerus latrans, Haswell, l. c., p. 324, pl. xix., fig. 1.

Rostrum curved downwards, acute. Eyes oval, very large. Antennæ subequal, as long as the cephalon and first two segments of the pereion Superior pair with the peduncle short, stout, the first segment much larger than the other two; flagellum more than twice as long as the peduncle. Inferior pair with the peduncle stout, the third, fourth and fifth segments subequal, short; flagellum more than twice as long as the peduncle. Maxillipedes with fairly large squamiform plates and a stout dactylos. Gnathopoda subequal, rather large; propodos ovoid, narrowed slightly distally—that of the second pair rather larger than that of the first; dactylos about half the length of the propodos. Two anterior pairs of pereiopoda subequal, subfoliaceous, armed with a few long hairs; dactylos absent. Third pair similar to the first and second, but with the coxæ narrower and hardly so deep. Fifth pair very much longer than the others; the base ovate; all the other segments narrow and elongate, bordered with short hairs. Posterior pleopoda foliaceous, pointed, bordered with long hairs. Telson squamiform, slightly cleft.

Bondi, New South Wales.

428. Œdicerus arenicola. A.M.

Œdicerus arenicola, Haswell, l. c., p. 325, pl. xxiv., fig. 3.

Cephalon slightly produced. Third and fourth segments of the pleon with an obscure longitudinal ridge in the middle dorsal line. Eyes rather small, round. Superior antennæ as long as the cephalon and the first four segments of the pereion; peduncle stout; flagellum subequal with the peduncle, of fifteen articuli. Inferior antennæ about equalling the superior in length; flagellum and peduncle subequal, the former composed of fourteen articuli. Gnathopoda subequal, hairy, larger in the male than in the female, the carpus in both pairs subtriangular, produced at its inferior and distal angle, rather larger in the posterior pair; propodos ovate, dactylos rather more than half as long as the propodos; palm not defined. Two first pairs of

pereiopoda foliaceous, dactylos absent; third and fourth pair subequal, similar to the first and second, but with the basc broader, and with a very small, conical dactylos; fifth pair ver long, the distal segments slender, armed with a few short sets Posterior pleopoda having the rami narrow, ovate, bordere internally towards the apex with slender hairs. Length $\frac{1}{10}$ in.

Shark Island, Port Jackson. Perhaps identical with *Œ. foso*

Genus Urothoë Dana.

Eyes two, lateral. Coxæ very large; fifth pair very smal Gnathopoda slender, subchelate. Superior antennæ appendicu late. Maxillipedes having the propodos long, and dilate anteriorly; carpus dilated internally and anteriorly, the lamell of the ischium small, of the basos rudimentary. Posterior pai of pleopoda two-branched, very long; branches foliaceou Telson double.

429. Urothoë pinguis.

Urothoë pinguis, Haswell, l. c., p. 325, pl. xix., fig. 2.

Body very thick. Eyes small, reniform. Superior antenn as long as the cephalon and first segment of the pereion; pedunc very stout, first segment the largest, third very small; flagellum long as the peduncle, of fifteen articuli; appendage two-third the length of the flagellum, composed of ten articuli. Infer antennæ longer than the superior pair; peduncle very thi fourth joint the largest, fifth about two-thirds of the length the fourth and more slender, both fringed below with long ha flagellum as long as the two last segments of the pedu Mandibles with a broad foliaceous palp. Maxillipedes wit strong dactylos and with small, spine-fringed, squamiform pl on both basos and ischium. Gnathopoda large; anterior with the carpus three-fourths of the length of the propodos; propodos ovoid, swollen; the palm not defined; the dactylo as long as the propodos; posterior pair larger than the an carpus small, subtriangular; propodos ovate, palm defined prominent angle; dactylos rather more than half as long propodos. First two pairs of pereiopoda subequal, sub-foli the basos about thrice as long as broad, the meros ovate,

the carpus broad, with a slight angular projection on its posterior border, to which are attached a number of long hairs; propodos nearly equal in length to the carpus, narrow; dactylos small. Third pair with its coxa extending forward nearly to the anterior boundary of the fourth segment; basos broader at its distal than at its proximal end; meros produced posteriorly, broader than long, armed behind with five large, triangular teeth; carpus as long as the meros, but narrower, armed behind with four triangular teeth; propodos rather longer than the carpus, about half as broad; dactylos almost straight, acute; all the segments except the first and last fringed with long hairs. Fourth pair longer than the third, hairy; basos broadly ovate; meros very large, twice as broad as long, with seven teeth on its posterior border; carpus as long as the merus, not quite so broad, narrowing distally; propodos long, narrow. Fifth pair much smaller than the other; basos expanded posteriorly, the posterior border finely serrated; meros and carpus sub-equal, not expanded; propodos equal in length to the carpus, but narrower; dactylos straight, acute. Rami of posterior pleopoda lanceolate, serrated on the edges. Halves of telson ovate, armed with a few hairs on the outer side and a terminal spine. Length $\frac{3}{4}$ in.

Bondi, New South Wales.

Genus Iphimedia, Rathke.

Cephalon produced and anteriorly depressed. Pereion distended. Pleon compressed. Eyes two. Antennæ simple, subequal. Oral appendages projecting anteriorly. Mandibles having an appendage. Maxillipedes not unguiculate. First pair of gnathopoda feeble, having the dactylos rudimentary, subapical; second also feeble, subchelate. Coxæ gradually increasing in depth to the second pair of pereiopoda, which, together with the preceding, are produced inferiorly to an angle. Coxæ of the third pair of pereiopoda not half as deep as the second. Pereiopoda having the dactylos strong and curved. Posterior pair of pleopoda biramous, clean. Telson single, squamiform, emarginate.

430. **Iphimedia ? ambigua.** A.M.

Iphimedia ambigua, Haswell, l. c., p. 327, pl. xxiv., fig. 2.

Cephalon with a long, pointed rostrum. First segment of the pereion broad; the second to the sixth, inclusive, very narrow,

the seventh and the first three segments of the pleon very wide; the seventh segment of the pereion and the first three segments of the pleon each armed with an acute spine on each side near the middle dorsal line, and another at the postero-lateral angle; third segment armed in addition with an acute, curved spine, situated between the lateral angle and the dorsal spine. Coxæ of the gnathopoda and the two anterior pairs of pereiopoda deep, that of the second pair of pereiopoda excavated behind for that of the third pair, the latter, together with the two following pairs, with a spine-like posterior angle. Antennæ subequal, the inferior pair rather longer than the superior. Anterior gnathopoda slender, filiform. Posterior gnathopoda slender, subchelate. Basos of the third pair of pereiopoda armed on the posterior border with an acute spine near the proximal end; basos of the fourth pair with two short spines, that of the fifth pair with the posterior border serrate and armed with an acute spine near its distal extremity. Last pair of pleopoda biramous, the inner ramus longer than the outer, bi-articulate. Telson scale-like, entire. Colour red with brown dots. Length $\frac{3}{20}$ in.

Port Jackson (dredged).

Sub-Family Gammarides.

Usually laterally compressed. Eyes two, compound, situated upon a protuberance between the superior and inferior pairs of antennæ. Antennæ situated one above the other. Superior antennæ long, slender and filamentous. Inferior antennæ subequal with the superior. First pair of gnathopoda more or less subchelate; second also, and generally well developed. The posterior pleopoda never furnished with hooks. Telson squamiform or tubular. [*S. B.*]

Genus Atylus, Leach.

Animal compressed. Antennæ subequal; superior without a secondary appendage. Maxillipedes unguiculate, having a squamiform plate developed from the basos and ischium. Gnathopoda subchelate. Pereiopoda subequal. Posterior pleopoda biramous. Telson single, squamiform, divided. [*S. B.*]

431. Atylus monoculoides. A.M.

Atylus monoculoides, Haswell, l. c., Vol. iv., p. 327, pl. xviii., fig. 4.

Eyes very large, nearly meeting above. Superior antennæ as long as the cephalon and first six segments of the pereion; first segment of the peduncle rather shorter than the cephalon, stout; second narrower and shorter, third scarcely distinguishable from the articuli of the flagellum; flagellum nearly twice as long as the peduncle; articuli broader than long at the proximal end, longer than broad distally, each armed with fasciculi of setæ both above and below, every second articulus slightly expanded at its infero-distal angle and tipped with auditory cilia. Inferior antennæ rather shorter than the superior pair; third joint of peduncle short, very stout, fourth and fifth subequal, the latter rather narrower than the former; flagellum as long as the last two segments of the peduncle; articuli very much broader than long at the proximal end, becoming longer than broad towards the extremity. Maxillipedes with a well-developed squamiform plate on the ischium and a smaller one on the basos. Gnathopoda equal, similar, the propodos ovoid, narrower distally than proximally, the palm not defined. Pereiopoda short and stout, bordered with fine setæ, the two last pairs rather longer than the third. Last three pairs of pleopoda with slender, acute, styliform rami, armed with a few fine setæ and slightly curved at the apex. Telson triangular, blunt, cleft in rather more than half its length. Colour light olive with a few red spots on the antennæ; eyes blue-black. Length ¼ in.

Port Jackson; Port Stephens.

432. Atylus lippus.

Atylus lippus, Haswell, l. c., p. 328, pl. xx., fig. 1.

Eyes roundish, the pigment scattered. Superior antennæ as long as the cephalon and first five segments of the pereion; segments of the peduncle short and stout, the first the largest, the third very small, scarcely distinguishable from the articuli of the flagellum; flagellum twice as long as the peduncle; the articuli longer than broad, each armed both above and below at the distal end with a few setæ, every fourth dilated inferiorly and distally, and crowned with stout cilia. Inferior antennæ

longer than the superior pair; flagellum more than twice as long as the peduncle; the segments short, broader than long, ornamented at the distal end with a fasciculus of curved setæ both above and below. Gnathopoda subequal, bordered with a fringe of short hairs on the meros, carpus and propodos; propodos ovate; palm undefined. Rami of posterior pleopoda foliaceous, serrated on the borders, the serrations armed each with one or two short setæ. Telson triangular, truncate, cleft in rather more than half its length. Length ¼ in.

Port Jackson.

433. **Atylus microdeuteropus.** A.M.

Atylus microdeuteropus, Haswell, l. c., Vol. v., p. 102, pl. vi., fig. 3.

Eyes oval, large, but separated by a broad space above. Superior antennæ rather longer than the cephalon and first three segments of the pereion, the flagellum nearly twice as long as the peduncle, its articuli armed distally with short hairs above and below—every third or fourth having its distal and inferior angle dilated and crowned with auditory cilia. Inferior antennæ about half the length of the animal, the flagellum more than twice as long as the peduncle. Anterior gnathopoda with the propodos ovate, the palm oblique, with three short spines near its proximal end; a strong appressed spine on the propodos over the insertion of the dactylos; dactylos toothed internally. Posterior gnathopoda rather smaller than the anterior pair, propodos ovate, armed with three stout spines near the distal extremity of the palm; palm oblique; dactylos toothed internally. Rami of the last pair of pleopoda armed laterally with a few short setæ in the axil of each of which is situated a delicate hair. Length nearly ¼ in.

Port Jackson; Botany Bay.

434. **Atylus megalophthalmus.** A.M.

Atylus megalophthalmus, Haswell, l. c., p. 102, pl. vi., fig. 4.

Eyes very large. Superior antennæ as long as the cephalon and pereion; flagellum twice as long as the peduncle, every second articulus very slightly dilated at its inferior and distal angle. Inferior antennæ longer than the superior pair, the flagellum about three times as long as the peduncle. Gnathopoda

subequal—the posterior pair slightly smaller than the anterior; propodos ovate, armed with a few plumose setæ, palm oblique, undefined. Last pair of pleopods with the rami armed along their edges with numerous serrations, each with a short seta in the axil of which is inserted a delicate hair. Length about ¼ in.

Port Jackson.

435. **Atylus austrinus.**

Atylus austrinus, Spence Bate, Cat. Amphip., p. 137, pl. xxvi., fig. 4.

Dorsal surface not denticulated. Eyes oval. Superior antennæ half as long as the animal; peduncle one-third of the length of the flagellum; articuli of the flagellum broader than long, each carrying distally, above and below, short setæ. Inferior antennæ a little more than half as long as the superior; peduncle as long as the peduncle of the superior. Gnathopoda slender; propoda scarcely broader than carpi. First pair having the propodos ovate; palm not oblique, convex, fringed with short fine cilia, with two rows of short sharp spines, one near the inferior angle, the second a little posterior. Second pair having the propodos long-ovate; palm oblique; inferior angle defined imperfectly by a lateral row of short spines. Three posterior pairs of pereiopoda having the dactylos in each directed anteriorly. Posterior pair of pleopoda naked, and considerably longer than the two preceding pairs. Telson long, cleft for about two-thirds of its length. [*S. B.*]

Sydney (Antarctic Expedition).

Genus Pherusa, Leach.

Differs from *Atylus* in having the telson entire, not cleft.

436. **Pherusa lævis.**

Pherusa lævis, Haswell, l. c., p. 260, pl. ix., fig. 4.

Eyes round. Superior antennæ equal in length to the cephalon and first six segments of the pereion; first two segments of the peduncle subequal; third scarcely half the length of the second; flagellum much longer than the peduncle. Inferior antennæ longer than the superior pair; fourth segment of the peduncle the longest; flagellum nearly twice as long as the peduncle. Anterior gnathopoda with the carpus and propodos subequal,

their ventral border armed with serrations beset with fasciculi of fine hairs; propodos rather longer than broad, palm transverse, not defined. Posterior gnathopoda with the carpus triangular, as long as the propodos, which is oblong, more than twice as long as broad, twice as long as the propodos of the anterior pair, with the palm oblique, undefined; both carpus and propodos bordered ventrally with a row of hair-bearing serrations. Third pair of pereiopoda rather shorter than the fourth and fifth, all three bordered with setæ. Rami of posterior pleopoda styliform. Telson triangular, pointed. Length 4½ lines.

Kiama.

437. **Pherusa Australis.**

Pherusa Australis, Haswell, l. c., Vol. v., p. 103, pl. vii., fig. 1.

Six anterior segments narrow; the four following broad. Cephalon with a small rostrum. Superior antennæ nearly as long as the cephalon and pereion; first two joints of the peduncle stout; third small, scarcely distinguishable from the articuli of the flagellum; flagellum slender, about twice as long as the peduncle. Inferior antennæ slightly longer than the superior pair; flagellum scarcely twice as long as the peduncle. Anterior gnathopoda with the propodos ovate, the palm oblique, undefined, armed with short setæ. Posterior gnathopoda larger than the anterior pair, the propodos ovate, dilated proximally armed with a few short setæ and hairs towards the palmar border; palm oblique, undefined. Fifth pair of pereiopoda much longer than the preceding pairs; the dactylos elongate, slender, straight. Last pair of pleopoda with the rami lanceolate, acute, each armed on the inner border with three setæ. Length ¼ in.

Botany Bay.

Genus Eusirus, Kröyer.

Cephalon not rostrated. Pereion and pleon compressed, much resembling *Atylus*. Superior antennæ long and slender, having a secondary appendage; inferior antennæ having the peduncle longer than the peduncle of the superior. Mandibles having an appendage. Maxillipedes unguiculate, having a small squamous plate to the coxæ, basos and ischium. Gnathopoda uniform, each having the propodos large, with the postero-inferior margin posteriorly produced; carpus attached to the propodos near the centre of its superior margin; infero-anterior margin produced

along the inferior margin of the propodos. Pereiopoda slender, subequal. Posterior pair of pleopoda biramous. Telson long, narrow, cleft at the apex. [*S.B.*]

438. **Eusirus dubius.**

Eusirus dubius, Haswell, l. c., Vol. iv., p. 331, pl. xx., fig. 3.

Last segment of the pereion with a median posterior spine. First two segments of the pleon each with five spines; fourth and fifth segments strongly keeled, the keel ending behind in an acute tooth. Eyes round. Superior antennæ equalling in length the cephalon and first three segments of the pereion; first segment of the peduncle compressed from above downwards, nearly as long as the cephalon; second much shorter; third scarcely distinguishable from the articuli of the flagellum. Flagellum longer than the peduncle, with a well-developed secondary appendage. Inferior antennæ half as long as the body; the peduncle longer than the superior pair; third segment very short; the others long, the fifth rather longer than the fourth; flagellum slightly longer than the last segment of the peduncle. Maxillipedes with a strong pointed dactylos, devoid of squamiform plates. Anterior gnathopoda with the carpus closely applied to the propodos, having a palmar process armed with a bunch of hairs; propodos ovate, longer than the cephalon. Posterior gnathopoda larger than the anterior pair, the carpus and propodos of a similar form; the latter longer than the cephalon and first segment of the pereion. Pereiopoda very long, the two anterior pairs slender, the others broad, with the basa long, serrated behind. Posterior pleopoda slightly shorter than the fifth pair, the rami broad-lanceolate, serrated. Telson as long as the protopodite of the posterior pleopoda, deeply cleft; the halves compressed, ending each in two acute spines, of which the outer is much more prominent than the inner. Length about $\frac{1}{3}$ in.

Tasmania. (Macleay Museum.)

This species probably approximates near enough to *E. cuspidatus* and *E. Helvetiæ* to be placed in the same genus; although the form of the maxillipedes appears to be rather different.

Genus Leucothoë, Leach.

Body long, compressed. Antennæ simple, subequal. Maxillipedes subpediform, unguiculate. Mandibles having an appendage.

Four anterior pairs of coxæ as deep as their respective segments. First pair of gnathopoda having the carpus inferiorly produced to half the length of the propodos; propodos ovate, dactylos long. Pereipoda subequal, slender. Posterior pair of pleopoda having two long lanceolate rami. Telson single, squamiform.

439. **Leucothoë commensalis.** A.M.

Leucothoë commensalis, Haswell, l. c., p. 261, pl. x., fig. 3.

Body large and thick. Coxæ of the second pereiopoda deeper than the rest. Eyes ovoid, black. Superior antennæ nearly as long as the cephalon and first three segments of the pereion, one-fourth longer than the inferior pair; first segment of the peduncle very stout, occupying about one-third of the total length; second rather narrower and slightly longer than the first; third short; flagellum as long as the second segment of the peduncle. Peduncle of inferior antennæ equal in length to the two first segments of the peduncle of the superior pair; flagellum very short. Maxillipedes stout, pediform. Anterior gnathopoda rather shorter than the posterior; proximal part of carpus dilated, irregularly heart-shaped; distal prolongation slender, uniform in thickness to near the end, where it tapers to a fine incurved point; propodos about three times as broad as the distal process of the carpus, which it equals in length, slightly narrowed distally, armed internally with a row of about fifteen short hairs; dactylos fully one-third of the length of the propodos. Posterior gnathopoda having the distal process of the carpus nearly half as long as the propodos, parallel-sided, incurved; propodos equalling in length the cephalon and the first three segments of the pereion, rather more than twice as long as broad, with three small teeth and a row of fine serrations on its palmar border, and a conical tooth on the opposite border at the base of the dactylos; dactylos not quite half as long as the propodos, uniformly curved. Pereiopoda subequal. Three posterior pairs of pleopoda slender, nearly smooth, the protopodite of the fourth pair longer than that of the fifth and sixth, that of the fifth the shortest. Telson elongated; the apex moderately acute.

Western Port; Port Jackson; Port Stephens; Port Denison; Thursday Island; Torres Straits.

440. **Leucothoë diemenensis.**

Leucothoë diemenensis, Haswell, l. c., p. 262, pl. ix., fig. 5.

Body broad. Coxæ of the second pereiopoda rather deeper than the others. Eyes round, large. Superior antennæ equal in length to the cephalon and the two first segments of the pereion; first two segments of the peduncle subequal, last short. Inferior antennæ with the peduncle equal in length to that of the superior pair; the flagellum about half the length of the last segment of the peduncle. Anterior gnathopoda large, in form nearly resembling those of *L. commensalis*. Posterior gnathopoda very large; carpus closely applied to the propodos, its palmar process nearly half as long as the latter, bifurcate at the extremity; propodos exceeding in length the cephalon and first three segments of the pereion, long-oval, with two or three denticles towards the proximal end of the palmar border; dactylos more than half as long as the propodos. Pereiopoda subequal. Sixth pair of pleopoda the longest. Telson lanceolate, acute. Length 6½ lines.

Tasmania (Macleay Museum).

441. **Leucothoë gracilis.**

Leucothoë gracilis, Haswell, l. c., p. 263, pl. x., fig. 2.

Coxæ of the second pereiopoda not deeper than the others. Superior antennæ equal in length to the cephalon and the two first segments of the pereion; first joint of the peduncle stout; second equal to the first in length, but narrow; third about half the length of the second; flagellum scarcely so long as the second segment of the peduncle. Peduncle of the inferior antennæ equal in length to that of the superior pair; flagellum shorter than the last segment of the peduncle. Anterior gnathopoda large, hardly distinguishable in form from those of *L. commensalis;* carpus equal in length to the cephalon and first two segments of the pereion. Posterior gnathopoda very large, as long as the cephalon and pereion, similar in shape to those of *L. commensalis;* propodos equalling in length the cephalon and two first segments of the pereion. Three posterior pairs subequal, very small and weak. Three posterior pairs of pleopoda long; the fourth and sixth subequal; the fifth shorter. Telson triangular, pointed.

Tasmania.

The two preceding species are perhaps better regarded as local varieties of *L. commensalis*.

442. **Leucothoë novæ-hollandiæ.** A.M.

Leucothoë novæ-hollandiæ, Haswell, l. c., p. 329, pl. xx., fig. 2.

Body thick. Pleon considerably shorter than the pereion. Cephalon small; first segment of the pereion very broad, tumid. Eyes oval. Superior antennæ a little longer than the cephalon and first segment of the pereion; first two segments of peduncle subequal—the second slightly longer than the first—the third about one-third of the length of the second; flagellum as long as the last two segments of the peduncle, very slender. Inferior antennæ subequal with superior; flagellum very slender, rather longer than the last segment of the peduncle. Maxillipedes with a strong dactylos and well-developed squamiform plates—those of the basa united together in the middle line. Anterior gnathopoda large, complexly subchelate; carpus much larger than the propodos, irregularly triangular—the proximal (apical) and superior angles rounded off, the infero-distal angle produced into an incurved pointed process, about one-half as long as the rest of the segment; propodos less than two-thirds of the length of the carpus, rather longer than broad, terminating in a straight edge, its dorsal border concave, ventral convex and closely applied to the infero-distal process of the carpus; dactylos absent. Posterior gnathopoda simply sub-chelate, with a small meros, a sub-triangular carpus, slightly produced at both of its distal angles; the propodos large, more than twice as long as broad, its dorsal border convex in its proximal two-thirds, concave near the distal end, ventral border slightly convex; palm oblique, slightly excavated, armed with a varying number of blunt teeth; dactylos more than half as long as the propodos. First and second pairs of coxæ as deep as their respective segments; third and fourth rather deeper; fifth scarcely half as deep as the fourth. Three posterior pairs of pereiopoda subequal, rather short. Fourth pair of pleopoda longer than the fifth and sixth; fifth and sixth subequal, with short, styliform, slighly curved rami. Telson triangular, blunt. Colour light pink, nearly white. Length ¾ in.

Port Jackson.

Genus Harmonia, Haswell.

Coxæ not so deep as their respective segments. Superior antennæ with an appendage. Inferior antennæ longer than the

superior pair. Mandibles with a palp. Maxillipedes unguiculate sub-pediform, provided with a squamiform plate on the basos only. Gnathopoda subchelate, unequal, posterior pair very large. Pereiopoda stout. Posterior pleopoda biramous, the rami short, conical. Telson single, elongate.

This genus, of which I have as yet observed but one species, has affinities with *Eurystheus* and *Amathia*, but is distinguished from the former by the form of the telson and the stoutness of the pereiopoda, and from the latter mainly by the large size of the posterior gnathopoda.

443. **Harmonia crassipes.** A.M.

Harmonia crassipes, Haswell, l. c., p. 330, pl. xix., fig. 3.

Superior antennæ as long as the cephalon and first six segments of the pereion, first and second segments of the peduncle subequal, the second narrower than the first, third scarcely distinguishable from the articuli of the flagellum, flagellum rather longer than the peduncle. Inferior antennæ longer than the superior pair; peduncle and flagellum subequal. Anterior gnathopoda small; propodos ovoid; palm oblique, undefined. Posterior gnathopoda much larger than the anterior pair; carpus sub-triangular; propodos irregularly ovoid, palm oblique, excavate, defined by a triangular tooth, and armed with another of similar form near the distal end. Two anterior pairs of pereiopoda subequal; three posterior pairs with the basa oblong, twice as long as broad, the other joints very broad, the dactylos very stout; fourth pair smaller than the fifth and sixth. Rami of the fourth pair of pleopoda as long as the protopodite; those of the fifth pair shorter; those of the sixth pair very short, conical, armed with a few straight setæ. Telson simple, conical, compressed. Colour brown. Length $\frac{3}{20}$ in.

Port Jackson.

Genus Melita, Leach.

Eyes round. Superior antennæ appendiculate. Inferior antennæ shorter than the superior. Coxæ not deeper than their respective segments, those of the third pair of pereiopoda shorter than those of the fourth. First pair of gnathopoda small; second pair of gnathopoda very large. Pereiopoda

subequal. Posterior pair of pleopoda having the rami very unequal, the outer one extending much beyond the preceding, the inner being rudimentary. Telson double. [*S. B.*]

444. **Melita Australis.** A.M.

Melita Australis, Haswell, l. c., p. 264, pl. ix., figs. 6 and 7.

Four anterior segments of the pleon with their posterior dorsal border concave, and armed with two to six acute teeth. Eyes small, round. Superior antennæ three-fourths of the length of the body; first joint of the peduncle stout, shorter than the second; flagellum longer than the peduncle. Inferior antennæ two-thirds of the length of the superior pair; flagellum shorter than peduncle. Anterior gnathopoda with the carpus and propodos of equal length; the former sub-triangular; the latter quadrate, the palm defined by a small spine; the dactylos curved. Posterior gnathopoda unequal in the male; the right resembling the anterior pair in form, but longer, the palm not defined, the left with the meros produced posteriorly into an acute spine, the propodos six times as long as that of the anterior pair, sub-triangular, with the apex rounded, the base (palm) oblique, slightly concave, and armed with three teeth, the antero-inferior angle produced into a stout palmar process grooved internally for the lodgment of the dactylos when the hand is closed; dactylos geniculate at base, slightly curved at apex. Three posterior pairs of pereiopoda large, serrate, hirsute, the third pair shorter than the others. Fourth pair of pleopoda longer than the rest; last pair with the inner ramus rudimentary, the outer long, foliaceous, serrate. Telson two-branched, hirsute. Length 4 lines.

Port Denison; Port Stephens; Port Jackson; Western Port.

Genus Mœra, Leach.

Long and slender. Superior antennæ appendiculate, much longer than the inferior. Inferior antennæ a little posterior to the superior, having the peduncle much longer than the flagellum, and not reaching to the extremity of the peduncle of the superior. Oral appendages receding. Mandibles having an appendage. Four anterior pairs of coxæ not so deep as their respective segments; three posterior not much shorter than the preceding.

Gnathopoda unequal, second pair much the larger. Pereiopoda slender, subequal. Posterior pair of pleopoda biramous, subfoliaceous. Telson double. [*S. B.*]

445. **Mœra Ramsayi.** A.M.

Melita? Ramsayi, Haswell, l. c., p. 265, pl. x, fig, 1.

Mœra Ramsayi, Haswell, l. c., p. 332.

Posterior border of the three first segments of the pleon armed with small serrations and short hairs; fourth and fifth segments with an acute mesial tooth and a few hairs. Superior antennæ as long as the cephalon and pereion; first two segments of the peduncle elongate, second longer than the first; third segment very short; flagellum rather shorter than the peduncle; appendage seven-jointed. Inferior antennæ with the peduncle equal in length to that of the superior pair; first segment the shorter, second the longest; flagellum about equal in length to the last segment of the peduncle. Anterior gnathopoda with the carpus and propodos subequal, hairy; the latter broad; palm oblique, armed with a few short denticles. Posterior gnathopoda unequal; right the largest, its carpus closely applied to the propodos; propodos more than thrice as long as that of the anterior pair, oblong, slightly longer distally than proximally, its length equal to nearly twice its least breadth; palm nearly transverse, defined by a strong, pointed, slightly curved tooth, and armed with three other large compressed teeth; left with the propodos about two-thirds of the length of that of the right, of similar shape, but having the palm rather more oblique, slightly convex, minutely crenulated, armed with a single small defining tooth. Three posterior pairs of pereiopoda serrated and hairy, rather shorter than the fourth and fifth. Posterior pleopoda wanting. Telson with each division armed terminally with a sharp tooth and a few long hairs. Length 5 lines.

Port Jackson (dredged.)

The posterior gnathopoda of this species are sometimes devoid of teeth, and have the palm very oblique, so that the limbs resemble closely the corresponding appendages in *M. rubromaculata*, from which, however, the present species is always distinguished by having a prominent, acute, mesial spine on the fourth and fifth segments of the pleon.

446. **Mœra rubro-maculata.** A.M.

Gammarus rubro-maculatus, Stimpson, Proc. Acad. Nat. Sci., Philad., July 1855; Spence Bate, Cat. Amphip. p. 220.

Mœra rubro-maculata, Haswell, l. c., p. 267, pl. x., fig. 4.

Posterior borders of the pleonal segments with comb-like rows of acute teeth. Coxæ shallower than their respective segments, fifth pair deeper than fourth. Superior antennæ half as long as the body, the peduncle rather shorter than the flagellum; first two segments rather long, third short; appendage of seven segments. Inferior antennæ a little more than half the length of the superior pair; flagellum less than half the length of the peduncle. Anterior gnathopoda rather large, hirsute below; carpus broad, triangular; propodos irregularly ovate, as long as the cephalon. Posterior gnathopoda much larger than the anterior pair; meros with a sharp spine behind; carpus hairy; propodos as long as the cephalon and first two segments of the pereion, ovate, its palm strongly convex, defined by a small tooth, its dorsal border nearly straight. Two anterior pairs of pereiopoda subequal, their coxæ little more than half the depth of their respective segments; meros produced anteriorly at its distal end. Three posterior pairs of pereiopoda hairy, the third pair the shortest, the fourth the longest; basos narrow, its posterior border serrated and armed with a sharp tooth at the distal end. Lateral plates (epimera) of the three anterior segments of the pleon serrated posteriorly. Fourth pair of pleopoda longer than fifth, both provided with setæ on the protopodite and rami. Last pair of pleopoda very large, biramous, the rami foliaceous, long-ovate, emarginate; their margins serrate, the serrations and the extremity armed with setæ. Telson of two short, cylindrical rami, each with one or two setæ. Colour light pink, striped and spotted with crimson.

Port Denison; Port Stephens; Port Jackson.

447. **Mœra hamigera.**

Mœra hamigera, Haswell, l. c., p. 333, pl. xxi, fig. 1.

Superior antennæ as long as the cephalon and pereion; second segment of the peduncle longer and narrower than the first; third half the length of the second; flagellum nearly as long as the peduncle; appendage of four articuli. Inferior antennæ as

long as the two first segments of the peduncle of the superior pair; flagellum longer than the last segment of the peduncle. Anterior gnathopoda small; propodos ovate, hairy; palm not defined. Posterior gnathopoda unequal; left a little larger than the anterior, and of similar form; right very large; meros produced infero-distally into a short pointed prominence; carpus sub-triangular; propodos four times as long as the carpus, slightly broader distally than proximally, greatest breadth about half the length, upper and lower borders nearly straight; palm oblique with three irregular teeth, the defining one sub-acute, the others blunt; dactylos short, hooked. Posterior pleopoda with the rami ovate, serrated, armed with setæ on the serrations and at the extremity. Length $\frac{1}{3}$ in.

Port Jackson.

448. **Mœra viridis.** A.M.

Mœra viridis, Haswell, l. c., p. 333, pl. xxi., fig. 2.

Eyes round. Superior antennæ as long as the cephalon and the first five segments of the pereion; second joint of the peduncle slightly longer and narrower than the first; third short; flagellum rather longer than the last two segments of the peduncle; appendage half as long as the flagellum, of five elongated articuli. Inferior antennæ inserted rather behind the superior pair, their peduncle subequal with the peduncle of the latter, the flagellum not longer than the last segment of the peduncle. Squamiform plates of the maxillipedes bordered with curved spines. Anterior gnathopoda small; propodos ovate, palm oblique, not defined. Posterior gnathopoda very large; carpus irregularly triangular, closely applied to the propodos, which is very large (as long as the cephalon and first three segments of the pereion), oblong, rather broader distally than proximally, the palm transverse, armed with three large compressed teeth; dactylos armed internally with two teeth. Three anterior pairs of pereiopoda subequal in length; two posterior pairs longer; basa of the three last pairs more than half as broad as long, minutely serrated; mera broad, strongly convex behind; meros, carpus, and propodos serrated and hairy on the borders. Posterior pleopoda biramous, the rami unequal, phylloid, the larger with three small notches on its outer border, smooth on its inner; the smaller with both

borders smooth, truncate, and armed with a few straight hairs. Telson with the segments compressed, terminating each in two teeth, of which the inner is the more prominent, and armed with several straight spines. Colour light green. Length ¼ in.

The *female* has the palm of the posterior gnathopoda straight, and the meros of the two last pairs of pereiopoda narrower than the male.

Clark Island, Port Jackson; Port Denison.

This species resembles *M. truncatipes*, Spinola, in the form of the posterior gnathopoda and other points; but differs from it in the form of the posterior pleopoda. From *M. quadrimanus*, Dana, to which it is also nearly allied, it differs in the form of the basa of the three posterior pairs of pereiopoda. From *Mœra Ramsayi*, Haswell, to which it also has a singular superficial likeness, it differs in the absence of spines on the pleon, and in the shortness of the rami of the last pair of pleopoda.

449. **Mœra dentifera.**

Mœra dentifera, Haswell, l. c., p. 332, pl. xx., fig. 4.

Superior antennæ equal in length to the cephalon and first four segments of the pereion; third segment of the peduncle two-thirds of the length of the second; flagellum as long as the last two segments of the peduncle, of about ten articuli, each ornamented like the peduncle, with several longish hairs; appendage well-developed, of five articuli. Inferior antennæ slightly longer than the superior; fourth and fifth segments of the peduncle sub-equal; flagellum half as long again as the last segment of the peduncle, of about twelve articuli; both peduncle and flagellum armed with slender hairs, which are longer on the former. Anterior gnathopoda small; propodos ovate, palm not defined. Posterior gnathopoda very large; meros with a pointed process at its infero-distal angle; carpus short, sub-triangular; propodos about six times the length of the carpus, broad at the base, narrowing distally; palm two-thirds of the length of the propodos, concave, with a low protuberance at its distal end, armed with fasciculi of long hairs, and defined by a long spine-like tooth; dactylos nearly as long as the propodos. Rami of posterior pleopoda scarcely larger than the others, lanceolate, armed with

a few bristles. Telson small, the segments conical. Colour light olive with minute black dots. Length ¼ in.

Port Jackson, among sea-weed.

450. **Mœra approximans.**

Mœra approximans, Haswell, l. c., p. 334, pl. xxi., fig. 8.

Resembles *M. dentifera*, but has the posterior gnathopoda subquadrate with the palm oblique, convex, defined by a small conical tooth.

Clark and Shark Islands, Port Jackson.

451. **Mœra spinosa** A.M.

Mœra spinosa, Haswell, l. c., p. 268, pl. x., fig. 5.

Posterior margin of the five anterior segments of the pleon armed with a few acute teeth or spines; fourth and fifth segments armed behind with acute spines. Coxæ much shallower than their respective segmetns. Lateral plate of the third segment of the pleon serrated posteriorly. Eyes long oval. Superior antennæ more than half the length of the body; first segment of the peduncle as long as the cephalon and the first segment of the pereion; second rather longer; third very short; flagellum as long as the peduncle; appendage nearly as long as the flagellum. Inferior antennæ more than half as long as the superior pair; third segment of the peduncle equal in length to the first segment of the pereion; fourth twice as long as the third; fifth as long as the cephalon; flagellum as long as the fifth segment of the peduncle. Anterior gnathopoda hairy; carpus rather longer than the propodos; the latter ovate; palm oblique, notched. Posterior gnathopoda with the propodos large, ovate, more dilated in the male than in the female, palm defined by a strong, acute tooth, and armed in the male with two other prominent teeth. Two anterior pairs of pereiopoda sub-equal. Third pair rather shorter than the fourth and fifth; basos of the three posterior pairs produced at its postero-distal angle; meros carpus and propodos serrated and hairy. Fifth pair of pleopoda much shorter than the fourth. Sixth pair large, with a stout protopodite and two broad-lanceolate rami; the latter serrated and armed with setæ. Telson double, each half ending in a sharp spine, and armed with a bundle of stiff setæ. Length 8 lines.

Tasmania.

452. **Mœra crassipes.**

Mœra crassipes, Haswell, l. c., Vol. v., p. 103, pl. vii., fig. 2.

Antennæ sub-equal, nearly as long as the cephalon and pereion, fringed below with long slender hairs. First pair of gnathopoda with the carpus and propodos sub-equal, their upper border nearly straight, the lower strongly convex. Posterior pair of gnathopoda unequal, the right much larger than the left; the palm deeply concave, with a minute tooth about its middle, and defined with a second, prominent, acute tooth. Fourth and fifth pairs of pereiopoda very much longer and broader than the rest, the fourth pair the broadest. Rami of last pair of pleopoda broad-lanceolate, rather short. Halves of telson conical, each tipped with a stout spine.

Port Jackson.

Genus MEGAMŒRA, Spence Bate.

Body thick. Dorsal segments of the pleon without fasciculi of spines. Eyes round. Superior antennæ long; inferior about half the length of the superior. Gnathopoda subchelate, the second pair being the larger. Posterior pair of pleopoda biramous. Telson double.

453. **Megamœra Mastersii.**

Megamœra Mastersii, Haswell, l. c., Vol. iv., p. 265, pl. xi., fig. 1.

Eyes rather small, oval. Superior antennæ more than half the length of the body; first two articulations of the peduncle subequal; third small; flagellum as long as the peduncle; appendage short, of four segments. Inferior antennæ with the peduncle rather longer than that of the superior pair; flagellum as long as the last segment of the peduncle. Anterior gnathopoda with the carpus and propodos subequal, both armed with hairs below; the latter having the dorsal border nearly straight, the palmar border strongly convex and armed with four small teeth. Posterior gnathopoda having the meros, carpus and propodos hairy behind, the meros armed behind with a sharp tooth, the carpus slightly produced at its postero-distal angle, closely applied to the propodos; propodos nearly twice as large as that of the anterior pair; its dorsal border gently convex; palm well-defined, toothed. Coxæ of the two anterior pairs of

pereiopoda much deeper than those of the three posterior pairs. Basos of posterior pereiopoda long-ovate, serrated on the borders; meros broad, strongly convex, produced to an acute point at its distal and posterior angle; meros and carpus armed at their distal ends with a few bristles. Fourth and fifth pairs of pleopoda subequal; sixth pair with the protopodite short and broad, the rami broad-lanceolate, and armed along the borders with about twenty bristle-bearing serrations. Telson triangular, blunt, with three small teeth at the extremity, and a notch armed with a single seta near the distal end of the inner border.

Port Jackson.

454. **Megamœra diemenensis.**

Megamœra diemenensis, Haswell, l. c., p. 266, pl. xi., fig. 3.

First four segments of the pleon each with a pair of strong spines on its posterior margin near the middle dorsal line. Eyes reniform. Superior antennæ more than half the length of the body; first segment of the peduncle stout, as long as the cephalon and the first segment of the pereion, second segment narrower and longer; third segment short; flagellum longer than the peduncle; appendage short, of four articuli. Inferior antennæ with the peduncle nearly equal in length to the two first segments of the peduncle of the superior pair; flagellum shorter than the peduncle. Anterior gnathopoda small; carpus and propodos sub-equal, hairy; propodos irregularly ovate; palm straight, oblique, undefined. Posterior gnathopoda large; meros armed behind with a short spine; carpus short, closely applied to the propodos; propodos four times as long as that of the anterior pair; broad proximally, becoming narrower towards the distal end; dactylos curved, bent on the inner side of the propodos when closed. First and second pereiopoda sub-equal. Three posterior pairs very broad; meros expanded posteriorly, and, together with the carpus and propodos, serrated and armed with setæ; third pair shorter than the fourth and fifth; basos of fifth pair much broader than that of the others. Rami of the posterior pleopoda sub-equal, twice as long as the protopodite, foliaceous, armed with setæ along the margins. Telson with the halves laterally compressed, each terminating in two acute spines, and armed with a few short setæ. Length 9 lines.

Tasmania.

455. Megamœra sub-carinata. A.M.

Megamœra sub-carinata, Haswell, l. c., p. 335, pl. xxi., fig. 4.

Fourth segment of the pleon dorsally bi-carinate, the carinæ projecting posteriorly in the form of compressed teeth. Superior antennæ nearly as long as the cephalon and perion; first two segments of the peduncle subequal, the first rather stouter; third very short; appendage minute; flagellum longer than the peduncle. Peduncle of inferior antennæ rather shorter than that of superior pair; flagellum shorter than the last two segments of the peduncle. Anterior gnathopoda stout, propodos small, palm oblique, undefined. Posterior gnathopoda large (in the male); meros and carpus short, propodos ovate, narrower distally than proximally, dorsal border nearly straight, ventral strongly convex, bordered with hairs, palm defined by an obscure protuberance. Posterior pleopoda with broad ovate rami, serrated externally, smooth internally, emarginate, tipped with a few setæ. Telson with the segments compressed, conical, emarginate, the extremity armed with two acute teeth and a few bristles. Colour nearly white, covered with minute brown dots, with two or three brown bands on the antennæ. Length $\frac{3}{10}$ in.

Port Jackson (very common at low water among algæ, etc.), Botany Bay; Port Stephens.

456. Megamœra suensis.

Megamœra suensis, Haswell, l. c., p. 335, pl. xxi., fig. 5.

This species resembles the preceding in the form of the antennæ, the posterior pleopoda and telson, and in the presence of a similar pair of teeth on the fourth segment of the pleon, but differs from it—besides other minor points—(1) in the possession of short mesial teeth on the posterior border of the last segment of the pereion and first two segments of the pleon; (2) in the direction of the palm of the posterior gnathopoda, which is transverse. Length $\frac{3}{10}$ in.

457. Megamœra Bœckii.

Megamœra Bœckii, Haswell, l. c., p. 336, pl. xxi., fig. 6.

Eyes oblong. Superior antennæ nearly as long as the cephalon and pereion; first two segments of the peduncle nearly equal in length, third small; flagellum longer than the peduncle; appendage composed of four elongated articuli. Inferior antennæ

scarcely two-thirds of the length of the superior pair; the flagellum a little longer than the last segment of the peduncle. Anterior gnathopoda with the propodos ovate, palm undefined, hairy. Posterior gnathopoda having the carpus subtriangular; the propodos ovate, twice as long as broad, twice as long as that of the anterior pair, the palm oblique, slightly excavate, with four small teeth; the dactylos rather more than one-third of the length of the propodos. Posterior three pairs of pereiopoda rather stout, serrated and bordered with setæ. Rami of posterior pleopoda short and broad, truncate, serrated and setiferous. Length $\frac{3}{10}$ in.

Port Jackson.

Genus Wyvillea, Haswell.

Coxæ scarcely so deep as their respective segments. Superior antennæ shorter than the inferior pair, appendiculate. Mandibles with an appendage. Maxillipedes exunguiculate, squamiform processes rudimentary. Gnathopoda subchelate, posterior pair very large. Posterior pleopoda uniramous—the ramus large. Telson simple, undivided.

458. Wyvillea longimanus.

Wyvillea longimanus, Haswell, l. c., p. 337, pl. xxii., fig. 7.

Eyes round. Superior antennæ rather longer than the cephalon and first three segments of the pereion; first segment of the peduncle short, thick; second twice as long; third rather smaller than the second; flagellum rather longer than the last segment of the peduncle, of seven articuli; appendage nearly one-fourth of the length of the flagellum. Inferior antennæ stout, subpediform, with the peduncle equal in length to the superior pair; flagellum equal in length to the last segment of the peduncle, armed with hairs which are slightly hooked at the points. Anterior gnathopoda small; propodos ovoid, narrowed distally; palm nearly longitudinal. Posterior gnathopoda very large; carpus short, subquadrate; propodos elongated, four times as long as broad, curved forwards, a blunt tooth at the proximal and another at the distal end of the concave posterior border; dactylos as long as the propodos. Pereiopoda all short, broad, bordered with setæ, the two anterior pairs equal, shorter than

the rest. Posterior pleopoda with the outer ramus broad, lanceolate, armed on the borders with a few setæ, and terminating in two short, strong setæ. Telson conical, blunt. Length about ¼ in.

Port Jackson.

Genus POLYCHERIA, Haswell.

Pereion broad; pleon compressed, more or less carinate. Antennæ sub-equal; superior pair without an appendage. Mandibles exappendiculate. Maxillipedes with well-developed squamiform process. Gnathopoda small, sub-chelate. Pereiopoda all prehensile, with narrow basa. Posterior pleopoda biramous with equal rami. Telson double.

459. Polycheria tenuipes.

Polycheria tenuipes, Haswell, l. c., p. 345, pl. xxii., fig. 8.

Eyes very large, red. Superior antennæ as long as the cephalon and first six segments of the pereion; first joint of the peduncle short and stout; second longer and narrower than the first; third inconspicuous; flagellum rather longer than the peduncle, of fourteen articuli. Inferior antennæ rather longer than the superior; first joint of the peduncle short and stout; second and third longer, slender, subequal; flagellum about equal in length to the peduncle, of seven elongated articuli, each with a circlet of a few delicate hairs. Anterior gnathopoda with the propodos oval; the palm nearly transverse, not defined. Posterior gnathopoda longer and more slender than the anterior pair; carpus and propodos nearly equal in length, the latter narrower than the former, with the palm transverse, the dactylos short. Pereiopoda subequal, slender, all prehensile; basos narrow; propodos oblong, palm transverse, waved; dactylos short. Three posterior pleopoda biramous, the rami unarmed, last pair with the rami broad-lanceolate, with one or two hairs on the borders. Segments of the telson broad-lanceolate, acute. Length $\frac{3}{10}$ in.

Port Jackson, two fathoms.

460. Polycheria brevicornis.

Polycheria brevicornis, Haswell, l. c., p. 346.

Eyes rather small, round. Superior antennæ as long as the cephalon and first three segments of the pereion; first segment

of the peduncle short and stout, second narrower than the first and about twice as long; third about one-fourth of the length of the second; flagellum equal in length to the second segment of the peduncle, of eight articuli. Inferior antennæ equal to the superior in length; flagellum as long as the last segment of the peduncle, of six articuli. Anterior gnathopoda with the carpus and propodos sub-equal, the latter ovate, with a few serrations on the borders; palm transverse, dactylos short. Posterior gnathopoda with the carpus rather longer than the propodos—the latter oblong, nearly three times as long as broad, with a few serrations on the borders; palm transverse, dactylos short. Length $\frac{3}{20}$ in.

Port Jackson.

Genus Microdeutopus, Costa.

Body long and slender. Superior pair of antennæ longer than the inferior, and carrying a secondary appendage. Mandibles furnished with an appendage. Gnathopoda subchelate, first pair larger than the second. Third pair of pereiopoda not longer than the two preceding; fourth pair much, and fifth pair very much longer than the others. Posterior pair of pleopoda biramous. Telson tubular, conical, and tipped with a double vertical apex. [*S. B.*]

461. Microdeutopus Australis.

Microdeutopus Australis, Haswell, l. c., p. 271, pl. xi., fig. 5.

Superior antennæ longer than the cephalon and pereion; peduncle armed with a few hairs; first segment nearly as long as the cephalon, stout; second twice as long as the first, slender; third very short; flagellum longer than peduncle, a few short hairs on each articulus. Inferior antennæ nearly two-thirds of the length of the superior pair; peduncle armed with a few hairs, the second joint the longest; flagellum shorter than the last segment of the peduncle, armed with hooked setæ. Anterior gnathopoda large, subchelate; meros small, narrow; carpus large, armed with a few scattered hairs; propodos smaller than the carpus, irregularly quadrate, rather longer than broad, armed with a few hairs; palm short, scarcely oblique, deeply excavate, minutely denticulated, bounded by a triangular tooth;

dactylos stout, a row of acute denticles on its inner border. Posterior gnathopoda smaller than the anterior pair; carpus and propodos subequal, serrated on their ventral border, armed with fasciculi of hairs; propodos ovate, half as broad as long, palm not defined, nearly transverse; dactylos stout, about one-third of the length of the propodos, armed on its inner border with a series of acute denticles. Second pair of pereiopoda longer than the first; dactylos in both long, slender. Posterior pleopoda biramous, the rami shorter than those of the preceding pairs, lanceolate, with a few short, nearly straight setæ along the borders and at the extremity. Telson large, armed with a few short hairs. Length 3½ lines.

Port Jackson.

462. **Microdeutopus Mortoni.** A.M.

Microdeutopus Mortoni, Haswell, l. c., p. 339, pl. xxii., fig. 2.

Anterior gnathopoda large; meros produced at its inferior and distal angle into a long sharp spine, which reaches beyond the distal extremity of the carpus; carpus larger than the propodos, oblong, more than twice as long as broad, the upper border convex, the lower straight; propodos nearly as broad as the carpus at the base, but narrowing slightly distally; dactylos two-thirds of the length of the propopos, minutely dentate on its inner border. Last pair of pereiopoda longer than the others. Posterior pleopoda short, the rami tipped with setæ which are longer and more slender than those on the preceding pairs. Telson conical, tipped with about half-a-dozen setæ similar to those on the posterior pleopoda. Length $\frac{3}{10}$ in.

Clark Island, Port Jackson.

463. **Microdeutopus tenuipes.** A.M.

Microdeutopus tenuipes, Haswell, l. c., p. 339, pl. xxii., fig. 1.

Eyes round. Superior antennæ as long as the cephalon and first six segments of the pereion; first segment of the peduncle scarcely as long as the cephalon, second half as long again, and much more slender; third about one-fifth of the length of the second; flagellum longer than the peduncle, of about eighteen elongated articuli, each tipped distally above and below with a few short hairs. Inferior antennæ about four-fifths of the

length of the superior pair, sub-pediform, the peduncle ornamented below with fasciculi of longish slender hairs; flagellum shorter than the last segment, ornamented with a few slender hairs on each articulus, and with a few stouter hooked hairs at the apex. Anterior gnathopoda with the carpus and propodos nearly equal in length, the former sub-triangular, the latter ovate; palm nearly longitudinal, scarcely defined. Posterior gnathopoda similar in shape to the anterior pair, but smaller, and with the palm directed a little more transversely. Two anterior pairs of pereiopoda short, stout; third pair shorter than the fourth; fifth much longer than the fourth, slender. Fourth and fifth pairs of pleopoda with stout, straight spines; sixth pair with two or three spines like those of the preceding pairs, and with two or three longer and more slender spines or hairs, which are slightly curved at the apex. Telson thick, truncate, armed above with two or three slender spines. Length ¼ in.

Clark Island, Port Jackson.

464. Microdeutopus chelifer.

Microdeutopus chelifer, Haswell, l. c., p. 240, pl. xxii. fig. 3.

Eyes small, round. Superior antennæ nearly as long as the cephalon and the first six segments of the pereion; flagellum longer than the peduncle, appendage of three articuli. Inferior antennæ sub-pediform, nearly as long as the superior; peduncle stout, much longer than that of the anterior pair; flagellum shorter than the last segment of the peduncle, obscurely multi-articulate. Anterior gnathopoda very large; carpus much larger than the propodos, rounded proximally, becoming broader towards the distal end, its distal border transverse, armed inferiorly with two prominent teeth, of which the outer is longer and sharper than the inner; propodos much narrower than the carpus, articulating with less than the upper two-thirds of the distal border of the latter, twice as long as broad, convex above, concave below, the inferior border armed with a small tubercle near the proximal end, palm not defined; dactylos with a few spine-like teeth on its inner border. Posterior gnathopoda small; carpus and propodos subequal, the latter rather the longer, the former ovate; palm undefined. Two anterior pairs of pereiopoda stout; three posterior pairs with the basa long-ovate; the third pair

shorter than the fourth and fifth. Posterior pleopoda very small; rami short, sub-foliaceous, armed with slender hairs. Telson conical, armed above with a few slender hairs. Length ¼ in.

Port Jackson.

Sub-Division Domicola.

Pereion not compressed. Having either the lower antennæ sub-pediform and furnished with strong, slightly-curved spines, or the posterior pair of pleopoda furnished with hook-like spines. Live in tubes or burrows, and usually can walk erect. [*S. B.*]

Family COROPHIIDÆ.

None of the segments of the pereion or pleon obsolete or fused together. [*S. B.*]

Section NIDIFICA.

Having the power of secreting a substance that, like a web, binds together the materials of which the nest is composed, or one of a more membranous character. [*S. B.*]

Sub-Family Podocerides.

Peduncle of the upper antennæ much shorter than the peduncle of the lower. Lower antennæ robust, and used in climbing. Posterior pair of pleopoda furnished with hook-like spines. [*S. B.*]

Genus AMPHITHOË, Leach.

Coxæ large, those pertaining to the third pair of pereiopoda having the anterior lobe not shorter than the preceding, posterior lobe very small. Second pair of gnathopoda larger than the first. Posterior pair of pleopoda supporting two rami, the outer ramus terminating in one or more short, slightly curved spines, the inner sub-foliaceous. Telson single, lamelliform.

465. Amphithoë quadrimanus.

Amphithoë quadrimanus, Haswell, l. c., p. 337, pl. xxi., fig. 7.

Eyes small, round. Superior antennæ as long as the cephalon and pereion; flagellum thrice as long as the peduncle. Inferior antennæ twice as long as the peduncle of the superior pair; third segment very stout, produced below at the distal end into a

rounded protuberance, clothed in common with the lower margins of the fourth and fifth segments, with long plumose hairs; flagellum as long as the peduncle. Propodos of anterior gnathopoda sub-quadrate, a little broader distally than proximally, palm nearly transverse, not defined. Posterior gnathopoda with the meros and carpus both produced into a small tooth at their inferior and distal angle; propodos large, sub-quadrate, twice as long as broad, palm nearly transverse, concave. Posterior pleopoda reaching beyond the extremity of the preceding pair, the outer ramus armed with three hooks, the inner foliaceous, armed with slender straight spines. Telson armed with about half-a-dozen slender spines. Length ¼ in.

Clark Island, Port Jackson.

466. **Amphithoë cinerea.**

Amphithoë cinerea, l. c., p. 269. pl. xi., fig. 4.

Eyes round, projecting, almost colourless. Superior antennæ more than half of the length of the body; first segment of the peduncle shorter than the second; third joint very short, flagellum much longer than the peduncle. Inferior antennæ shorter than the superior pair; flagellum shorter than the last two segments of the peduncle. Anterior gnathopoda with the propodos long-ovate, armed with hairs, the palm oblique, undefined. Posterior gnathopoda with the propodos broader, but rather shorter than that of the anterior pair, hairy; palm oblique, convex, devoid of teeth, but with a tubercle near its distal end. Two anterior pairs of pereiopoda subequal, stoutish. Third pair with the basos sub-circular; basa of fourth and fifth pairs oval. Posterior pleopoda rather short, the rami not extending so far as those of the fifth pair; the outer ramus short, armed with two hooks; the inner slightly longer, broader, compressed, armed with a few short setæ. Telson sub-triangular, blunt. Colour ashy-grey.

Port Jackson.

467. **Amphithoë grandimanus.**

Amphithoë grandimanus, Haswell, l. c., p. 270.

Nearly allied to the preceding; distinguished by the size and form of the posterior gnathopoda, which are very much larger

than the anterior pair, with the propodos broad, irregularly ovoid; the palm oblique, deeply excavated, its border waved, defined posteriorly by a strong tooth. Length eight lines.

Port Jackson.

468. **Amphithoë setosa.**

Amphithoë setosa, Haswell, l. c., p. 270.

Eyes small, round, red. Superior antennæ nearly as long as the body; first two segments of the peduncle subequal, third about one-third of the length of the second; flagellum twice as long as the peduncle. Inferior antennæ nearly as long as the superior pair; ornamented with long hairs; flagellum as long as the last two segments of the peduncle. Anterior gnathopoda rather large; meros produced into an acute process at its infero-distal angle; carpus sub-triangular, longer than the meros or propodos; propodos ovate; palm oblique; undefined. Posterior gnathopoda larger than the anterior pair, fringed with long slender hairs; meros and carpus short, both slightly produced at the infero-distal angle; propodos more than twice as long as the carpus, rather longer than that of the anterior pair, ovate, swollen; palm oblique, defined by a small tooth. Colour light brown with minute black dots.

Rock-pools at Botany Bay.

Genus XENOCHEIRA, Haswell.

Body slender. Coxæ small. Superior antennæ very long, longer than the inferior pair, with a secondary appendage. Mandibles with an appendage. Both pairs of gnathopoda non-subchelate, armed with very long hairs; carpus of posterior pair broad, plate-like, applied to the anterior (dorsal) border of the meros. Posterior pleopoda biramous. Telson simple.

469. **Xenocheira fasciata.** A.M.

Xenocheira fasciata, Haswell, l. c., p. 272, pl. xi., fig. 6.

Eyes round. Superior antennæ as long as the cephalon and pereion; first joint of the peduncle stout, rather longer than the cephalon; second rather longer and narrower than the first; third not one-half of the length of the second; flagellum longer than the peduncle, slender; appendage short, of five segments.

Inferior antennæ with the peduncle longer than that of the superior pair; fourth segment the longest; flagellum shorter than the last segment of the peduncle, of nine articuli, each armed with one or two curved spines and a few hairs. Maxillipedes non-unguiculate; the borders of the ischial scale and of the palp armed with a close fringe of long hairs. Anterior gnathopoda sub-pediform, stout; carpus triangular, short; propodos nearly twice as long as the carpus, narrow, its superior border slightly convex, its inferior straight; dactylos terminal, large, its inner border armed with a series of sharp denticles. Posterior gnathopoda with the ischium sub-triangular, articulating with both meros and carpus; the latter broad, squamiform, with a close fringe of long hairs; the former narrow; propodos narrow, subequal with that of the anterior gnathopoda; dactylos very short. Fourth and fifth pairs of pleopoda armed with a few acute spines. Posterior pleopoda with the rami narrow, bordered with a few setiferous serrations and armed terminally with a small number of slender hairs. Telson scale-like, very short. Length 3½ lines.

Port Jackson; Port Stephens; Griffiths' Point (Victoria).

Genus HAPLOCHEIRA, Haswell.

Body not much compressed laterally. Upper and lower antennæ subequal; superior pair without an appendage; inferior subpediform. Both pairs of gnathopoda simple, fringed with long hairs. Posterior pleopoda biramous, with unequal rami. Telson single?

470. Haplocheira typica.

Haplocheira typica, Haswell, l. c., p. 273, pl. xi., fig. 2.

Superior antennæ as long as the cephalon and first three segments of the pereion; first and second segments of the peduncle of nearly equal length, first stouter than second; third half as long as the latter; flagellum as long as the last two segments of the peduncle, hairy. Inferior antennæ subequal with the superior pair; peduncle armed with a few hairs, longer than that of the superior pair, fourth and fifth joints subequal; flagellum shorter than the last segment of the peduncle, composed of four articuli, each armed with pointed, slightly hooked spines and a few short

hairs. Anterior gnathopoda with the propodos long and narrow; the meros, carpus and propodos fringed with long slender hairs. Posterior gnathopoda longer and more slender than the anterior pair, bordered like the latter with numerous long delicate hairs; ischium and meros small; carpus and propodos of nearly equal length—the latter tapering distally; dactylos small. Pereiopoda short, stout; three anterior pairs subequal, fourth and fifth longer. Fourth pair of pleopoda armed on the protopodite and each ramus with a row of spines which are acute and slightly curved at the tip; fifth pair shorter than the fourth, armed with similar but shorter spines; sixth pair with the rami short, conical, unequal, the outer armed with a few short stout spines, the inner terminated by a few hairs. Telson cleft, armed with short blunt spines. Colour dark grey. Length 3½ lines.

Port Jackson; under stones at low-water mark.

Genus Podocerus, Leach.

Eyes small, situated on a lobe between the superior and inferior antennæ. Superior antennæ having a secondary appendage, which is generally very minute. Inferior antennæ robust, the flagellum consisting of but few articuli and as stout as the peduncle, the hairs towards the extremity being developed into spines, which increase in strength as they approach the apex, where they become curved. Second pair of gnathopoda having the propodos (in the male) much larger than that of the first pair. Two anterior pairs of pereiopoda short, having the basa very broad. Posterior pair of pleopoda having two rami, one of which is armed with one or more hooked spines. Telson squamiform.

471. Podocerus australis.

Podocerus australis, Haswell, l. c., p. 338, pl. xxi., fig. 8.

Eyes small, round. Superior antennæ nearly as long as the cephalon and first four segments of the pereion, armed below with long hairs; flagellum subequal with the last segment of the peduncle, obscurely multiarticulate. Inferior antennæ longer than the superior pair, very stout; flagellum much shorter than the last segment of the peduncle, obscurely multiarticulate, secondary appendage uni-articulate. Anterior gnathopoda small,

the propodos ovate, the palm undefined. Posterior gnathopoda very large, carpus produced at its inferior and distal angle into a long, curved, compressed, pointed process, which nearly equals the propodos in length; propodos large, thrice as long as broad, convex dorsally, concave ventrally, the distal extremity armed with an acute tooth near the insertion of the dactylos; dactylos about two-thirds of the length of the propodos. Three anterior pairs of pereiopoda very short; two posterior pairs much longer.

Port Jackson.

Sub-Family Corophiides.

Cephalon and pereion broader than deep. Inferior antennæ sub-pediform, longer and more powerful than the superior. Coxæ small. Posterior pair of pleopoda simply sub-foliaceous, or styliform, not armed with hook-like spines. Telson squamiform, unarmed. [*S. B.*]

Genus CYRTOPHIUM. Dana.

Pereion narrow-elliptical. Pleon inflexed beneath the pereion. Cephalon sub-quadrate. Eyes situated at the anterior angles and a little prominent. Antennæ pediform, with very short flagella or none; the inferior pair a little the longer. Gnathopoda subchelate; second pair much the stouter. Posterior pair of pleopoda minute, simple, partly concealed by the telson; antepenultimate and penultimate pairs with the rami unequal, not specially covered on the outer side. [*Dana.*]

472. **Cyrtophium parasiticum.**

Cyrtophium parasiticum, Haswell, l. c., p. 274, pl. xii., fig 1.

Superior antennæ exceeding the body in length, hairy; the flagellum shorter than the last segment of the peduncle. Inferior antennæ nearly once and a half the length of the body, armed with long hairs; third and fourth segments of the peduncle subequal; fifth shorter. Anterior gnathopoda hairy; propodos shorter than the carpus, ovate. Posterior gnathopoda very large; propodos as long as the cephalon and the first three segments of the pereion; palmar border with a shallow excavation near the middle of its length, armed distally with fine denticles. Pereiopoda subequal. Protopodite of the fourth pleopoda stout; inner ramus longer and stouter than the outer,

both armed with a few setæ. Fifth pleopoda wanting. Sixth pleopoda short, foliaceous, ovate. Telson simple, squamiform, blunt. Length, inclusive of antennæ, 4½ lines.

Port Jackson.

473. Cyrtophium dentatum.

Cyrtophium dentatum, Haswell, l. c., p. 342, pl. xxii., fig. 5.

Male.—Two last segments of the pereion, and two first of the pleon projecting in the form of a tooth in the middle dorsal line. Superior antennæ as long as the cephalon and pereion; first segment of the peduncle short, second and third twice as long, subequal, fringed below with long slender hairs; a short bi-articulate appendage; flagellum rather shorter than the last segment of the peduncle, sex-articulate. Inferior antennæ rather longer than the body; first segment of the peduncle short, stout; second twice as long; third the longest; fourth not half the length of the third and slender; flagellum scarcely as long as the last segment of the peduncle, sex-articulate. Anterior gnathopoda small, with the carpus and propodos subequal, the latter sub-triangular, the palm nearly longitudinal, straight; dactylos armed internally with a few acute teeth; meros, carpus and propodos with a few slender hairs. Posterior gnathopoda much larger than the anterior; meros with an acute spine on its posterior border; carpus small; propodos long-ovoid, palmar border armed with three prominent teeth, and fringed with numerous slender hairs; three setiferous notches on the dorsal border. Two anterior pairs of pereiopoda subequal, bordered with setæ; three posterior pairs subequal, longer than the others, setiferous; basa long-ovate; dactyla large. Fourth and fifth pair of pleopoda with the rami unequal—the inner the longer—each armed with a few straight spines. Last pair of pleopoda rudimentary, with one or two setæ, almost concealed by the telson. Telson prominent, conical, armed terminally with two slender spines. Colour grey or red. Length 2½ lines.

Port Jackson; Port Stephens; Port Molle; Griffiths' Point.

474. Cyrtophium minutum.

Cyrtophium minutum, Haswell, l. c., p. 343, pl. xxii., fig. 6.

Anterior segments of the pleon slightly produced in the middle dorsal line. Eyes very prominent. Superior antennæ as long

as the cephalon and the first six segments of the pereion; flagellum subequal with the last segment of the peduncle, of three articuli, of which the first is much longer than the other two; no appendage. Inferior antennæ equal in length to the superior pair; flagellum scarcely half as long as the last segment of the peduncle, obscurely multiarticulate. Anterior gnathopoda very small, fringed with long hairs; propodos long-ovate; palm undefined; dactylos nearly as long as the propodos. Posterior gnathopoda very large, basos stout; meros produced below into an angular protuberance; carpus sub-quadrate; propodos ovate, dilated, dorsal border strongly convex, palm defined by a prominent acute tooth, and occupied distally by a rounded eminence; ventral borders of the meros and propodos ornamented with a close fringe of long plumose hairs. Fourth pair of pleopoda with the outer ramus much shorter and narrower than the inner; both tipped with a few short bristles. Fifth pair with the outer ramus styliform, armed with one or two hairs at the apex, the inner foliaceous, long-ovate, bordered internally with a few hairs. Nearly colourless, with minute brown spots and a transverse brown band on the cephalon at the base of the superior antennæ. Length $\frac{1}{10}$ in.

Port Jackson.

475. **Cyrtophium? hystrix.** A.M.

Cyrtophium? hystrix, Haswell, l. c., Vol. v., p. 104, pl. vii., fig. 3.

Cephalon, pereion and first two segments of pleon armed with prominent spines on the dorsal and lateral surfaces; lateral borders of the second to the sixth segments of the pereion produced outwards and upwards, acuminate. Coxæ of the pereiopoda each armed with a small point on its lower border. Antennæ stout; superior pair as long as the cephalon and pereion, basal joint of the peduncle short, with an acute spine above; third joint the longest; flagellum shorter than the last segment of the peduncle; inferior antennæ longer than the superior pair, very stout, fifth joint of the peduncle longer than the fourth, flagellum much shorter than the last segment of the peduncle. Anterior gnathopoda with the carpus and propodos sub-equal, both armed ventrally with a row of setæ, palm straight, oblique; dactylos longer than palm. Posterior gnathopoda with the carpus very small, the propodos large, ovate, narrower at its distal than at its

proximal end, palm nearly longitudinal, undefined. Pereiopoda subequal, the fourth pair longer than the preceding, the joints broad, the dactylos very stout. Penultimate pair of pleopoda with two unequal rami, the outer shorter and narrower than the inner, tipped with two acute bristles, the inner broad, armed terminally and internally with a few strong bristles. Last pair of pleopoda uniramous, minute, almost concealed under the broad rounded telson.

Port Jackson.

Genus Colomastix, Grube.

Body rather slender, depressed, tapering behind, the coxæ low. Antennæ short, strong, with the flagella rudimentary or absent; the superior scarcely longer than the inferior, without a secondary appendage. Maxillipedes exunguiculate. First pair of gnathopoda slender, exunguiculate; second stronger, subchelate. All the pleopoda biramous, without spines; outer ramus of the sixth pair neither hook-like nor armed with spines. Telson simple, laminar.

476. **Colomastix Brazieri.** A.M.

Colomastix Brazieri, Haswell, l. c., Vol. iv., p. 341, pl. xxii., fig. 4.

Eyes round, rather prominent. Superior antennæ as long as the cephalon and first three segments of the pereion, sub-pediform, extremely stout; peduncle slightly compressed from above downwards, trigonal; first segment broader but shorter than the second; third half as long as the second; flagellum rudimentary, of four small articuli. Inferior antennæ with the peduncle as stout as that of the superior pair, slightly compressed; flagellum of one articulus, armed with a few simple, straight hairs. Epistome and labrum very prominent. Anterior gnathopoda simple, filiform exunguiculate, folded under the pereion, all the joints (except the coxa) sub-cylindrical, slender. Posterior gnathopoda large, carpus produced inferiorly, propodos ovate, palm oblique, toothed. Two anterior pairs of pereipoda stout; three posterior pairs subequal, smaller than the first two. Sixth pair of pleopoda with the outer ramus short, the inner twice as long, lanceolate, acute. Telson conical, compressed. Colour light green. Length about ¾ in.

The female differs from the male in the smaller size of the posterior gnathopoda, which have an undefined hairy palm, and a very small dactylos.

Port Jackson, 2—10 fathoms.

Genus Icilius, Dana.

Body much compressed. Antennæ elongate, and having long flagella; the inferior pair longest. Gnathopoda not prehensile, vergiform and unguiculate. Posterior pair of pleopoda furcate. [*D.*]

477. **Icilius Australis.** Plate iv., fig. 4. **A.M.**

Icilius Australis, Haswell, l. c., p. 274, pl. xii., fig. 2.

Icilius punctatus, l. c., p. 343, pl. xii., fig. 2.

Pereion ovate, first two segments very short. Eyes red, very prominent. Superior antennæ much smaller than the inferior pair, nearly as long as the body, with a uni-articulate appendage; third joint of the peduncle shorter than the others; flagellum longer than the peduncle. Peduncle of inferior antennæ very stout, as long as the superior pair. Maxillipedes unguiculate, hairy, provided with squamiform plates. Gnathopoda subequal, slender, unguiculate, provided with long hairs; the carpus rather longer than the propodos. Two first pairs of pereiopoda large and prehensile in the male, the propodos being short and broad, with a deeply excavated, spine-armed palm, and the dactylos stout and long. Last pair of pereiopoda longer than the others. Fifth pleopoda with the inner ramus larger than the outer. Inner ramus of sixth pleopoda foliaceous, outer small, long-ovate. Length about 3 lines.

Port Jackson (dredged).

An examination of a series of specimens has made it appear probable that *I. australis* and *I. punctatus* are to be regarded as varieties of one species.

Tribe ISOPODA.

Body dorso-ventrally compressed. The thoracic legs consisting of an anterior series of three, and a posterior series of four pairs. Segments of the abdomen short, and often more or less coalescent. Terminal segment well-developed. Abdominal appendages of two

kinds, the first five pairs foliaceous and branchial in function, the sixth pair operculiform, lamellate or styliform. No caudal appendages.

Sub-Tribe IDOTEIDEA.

Body oblong-oval, or linear in form. Posterior pair of abdominal appendages enlarged, operculiform, closing over the other (branchial) abdominal appendages. [*M.*]

Family I. IDOTEIDÆ.

Legs all similar, sub-prehensile, or adapted for walking.

Genus IDOTEA, Fabr.

Body elongated. Head quadrilateral, broader than long. Eyes placed laterally. External antennæ much longer than the internal, and terminating in a multi-articulate flagellum. Maxillipedes very large. Seven segments of the body all nearly of the same shape and size. Abdomen with several of the seven segments short, usually more or less coalescent, the terminal segment very large, its appendages greatly developed, covering the whole inferior surface of the abdomen, and closing like doors over the branchial appendages. [*M.*]

478. **Idotea stricta.**

Idotea stricta, Dana, U.S. Explor. Exped., Crust., Vol. ii., p. 704, pl. xlvi., fig. 7.

Narrow, front excavate, head a little transverse. Epimerals very small. Outer antennæ about half as long as body, flagellum shorter than the base, ten-jointed, naked. Inner antennæ hardly reaching to penultimate basal joint of outer pair. Abdomen narrow oblong (length more than twice the breadth), triangulate at extremity and subacute, lateral margins a little excavate or concave. Feet sparingly hirsute below. [*D.*]

New South Wales.

479. **Idotea caudacuta.** A.M.

Idotea caudacuta, Haswell, l. c., Vol. vi., p. 1, pl. iv., fig. 4.

Length of body about three and two-thirds the greatest breadth. Head nearly twice as broad as long, front deeply concave.

Thoracic segments increasing slightly in breadth posteriorly. Epimera of first segment not distinct; those of second, third and fourth small; the rest larger; those of the sixth and seventh segments produced to an angle posteriorly. Greatest breadth of the abdomen more than half the length; in old specimens there is a low rounded mesial dorsal ridge; the extremity narrowing suddenly and rounded in old specimens but sub-acute in younger. Internal antennæ very short, scarcely reaching the extremity of the third joint of the peduncle of the outer pair; basal segment of the peduncle short and thick, quadrate; second segment shorter and much narrower than the first; third as long as the first, slender, cylindrical. External antennæ nearly equal in length to the head and first six segments of the thorax; three basal joints short and stout, fourth the longest; flagellum longer than the peduncle, tapering, composed of about twenty articuli. Colour very inconstant, sometimes olive-green, sometimes rich brown, variously marked with bands of dull yellow. Length of largest specimen 1¼ in.

Griffiths' Point; Port Philip; Tasmania.

The nearest described ally of this species appears to be *I. stricta* of Dana, from which it is distinguished, among other points, by the much greater number of joints in the outer antennæ.

480. **Idotea excavata.** A.M.

Idotea excavata, Haswell, l. c., p. 2.

Length of body about four and a half times the greatest breadth. Head very small, much narrower than the thorax. Epimera of the last six thoracic segments distinct, increasing in size posteriorly—the last three acutely angulated behind. Abdomen about twice as long as broad, scarcely equal in length to the last four segments of the thorax, terminated posteriorly by a concave border bounded on either side by an acute tooth. Internal antennæ short, a little longer than the three basal segments of the peduncle of the outer pair; flagellum shorter than the last segment of the peduncle. Outer antennæ about two-thirds of the length of the body; the peduncle slightly compressed dorso-ventrally, the two last joints nearly equal in

length, longer than the others; flagellum composed of about twenty articuli. Length 1¾ in.

Tasmania (Australian Museum).

Allied to *I. elongata*, Miers, but having the thorax very much broader in proportion to the length.

Genus Crabyzos, Spence Bate.

Head and pereion of equal breadth, the first segment of the pereion joined to the head. Upper antennæ not longer than the cephalon. Lower antennæ much longer than the upper. Pereiopoda simple, the dactyli terminating in two teeth; all the pereiopoda except the first slender and short. [*S. B.*]

481. Crabyzos longicaudatus.

Crabyzos longicaudatus, Spence Bate, Proc. Zool. Soc., 1863, p. 504, pl. xli., fig. 7.

Pleon terminating in a long point. First segment of the body equal to the head. Superior antennæ shorter than the head; inferior antennæ as long as the second segment of the pereion. First pair of pereiopoda tolerably robust and long, all the rest shorter and feebler, all terminating in double-pointed dactyli. [*S. B.*]

Gulf of St. Vincent, 4½ fathoms.

Sub-Tribe Oniscoidea.

Body usually oblong or oblong-oval, terminal segment not greatly developed. Posterior pair of abdominal appendages usually styliform, rarely obsolete, terminal or sub-terminal (never closing over the other branchial appendages as in the *Idoteidæ*, or large, lamellate, and natatorial as in the *Cymothoidæ*). [*M.*]

Family ARMADILLIDÆ.

Body very convex, closely articulated. Abdomen multi-articulate, the last segment small. Caudal appendages lamellate, not exserted beyond the abdomen. Mandibles without palp. Internal antennæ inconspicuous. [*D.*]

Sub-Family ARMADILLINÆ.

Caudal appendages partly visible between the two last segments of the abdomen.

Genus ARMADILLIDIUM, Brandt.

Base of the caudal appendages short, the external ramus broad, terminal, the inner ramus small.

482. **Armadillidium subdentatum.** A.M.

Armadillidium subdentatum, Haswell, MS.

First segment of the pereion with its postero-lateral angle produced and almost tooth-like. Postero-lateral angles of the remaining segments very slightly produced. Terminal segment of the abdomen as broad as long, the lateral borders converging posteriorly; the posterior border slightly convex. Basal joint of the caudal appendages broad proximally, narrowing distally, distal border concave, inclined obliquely backwards and inwards. Outer ramus broader distally than proximally, the terminal border straight, the inner and distal angle rounded. Inner ramus becoming slightly enlarged towards the extremity, not reaching quite to the extremity of the terminal segment. Colour lead-colour. Length $\frac{1}{4}$ in.

Sydney; Tasmania.

Family ONISCIDÆ.

Body moderately convex and usually loosely articulated. Segments of the abdomen distinct, terminal segment small. Caudal appendages exserted, styliform. Mandibles not palpigerous. Internal antennæ very small. [*M.*]

Sub-Family ONISCINÆ.

External antennæ geniculate at the fifth joint. Base of the caudal appendages very short, with two very unequal rami, of which the longer is exserted externally, the other internal and placed beneath the abdomen.

Genus PORCELLIO, Latr.

Body oblong-oval, loosely articulated. External antennæ with their base partly concealed by the front of the head, seven-jointed, the two terminal joints constituting the flagellum.

483. Porcellio graniger.

Porcellio graniger, List Crust. Brit. Mus., p. 99 (1847); Miers, Ann. Mag. Nat. Hist. (Ser. 4), xvii., p. 226 (1876); Cat. Crust. N.Z., p. 99, pl. ii., fig. 6 (1876).

Oblong-oval, moderately convex, granulate; the granules seriate along the posterior margin of each segment, and partly seriate elsewhere. Head transverse, with the antero-lateral lobes narrow and very prominent. Eyes small, black. Segments of the thorax slightly tending backward at their latero-posterior angles. Segments of the abdomen very short, smooth on the sides, and with the latero-posterior angles acute, directed backwards, terminal segment triangular, acute, concave above, narrowed posteriorly, scarcely reaching beyond the latero-posterior angles of the penultimate segment. Caudal appendages very short, reaching a little beyond the apex of the terminal segment, the larger (exserted) ramus ovate. Legs armed with slender, acute spines. Colour chestnut brown. Length $\frac{3}{8}$ in. [*M.*]

Tasmania; Melbourne. Found also in New Zealand.

484. Porcellio obtusifrons. A.M.

Porcellio obtusifrons, Haswell, MS.

Body broad and convex. Head short, transverse; lateral frontal lobes rather prominent, but scarcely extending beyond the antero-lateral angles of the first thoracic segment; mesial frontal lobe very low, much less prominent than the lateral lobes, forming an obtuse angle. Segments of the thorax with their postero-lateral angles slightly produced backwards. Abdominal segments with their postero-lateral angles strongly produced and acute. Last segment short, produced behind into a narrow mesial sub-acute process, which, however, scarcely extends beyond the postero-lateral angles of the penultimate segment. Caudal appendages extending well beyond the apex of the terminal segment; inner ramus narrow, pointed; outer ramus nearly twice as long as the inner, lanceolate. Length nearly $\frac{1}{4}$ in.; breadth about $\frac{1}{8}$ in. Colour slate-grey, with lighter markings towards the middle of each segment.

Sydney.

Sub-Family Ligiinæ.

External antennæ not decidedly geniculate at the fifth joint, terminating in a multi-articulate flagellum. Base of the caudal appendages very long and exserted, with two long setiform rami. Maxillipedes four-jointed, elongated.

Genus Ligia, Fabr.

Carapace but slightly convex, nearly oval, with the abdominal segments narrower than those of the thorax. Head small. External antennæ very long. Internal antennæ rudimentary. Base of the caudal appendages not furcate at the apex, elongated, with two slender styliform rami.

485. Ligia australiensis.

Lygia australiensis, Dana, U. S. Explor. Exped., Crust., ii., p. 740, pl. xlix., fig. 3.

Abdomen with the three segments before the last but little prolonged backwards on either side, and the sides of the penultimate not reaching half-way to the angles of the last segment. Postero-lateral angles of the last segment very short, acute, and not reaching beyond the low tooth on the posterior margin at the base of the stylets. Body rather narrow, and surface fine granulous all over, the granules scattered. [*Dana.*]

New South Wales.

Sub-Tribe Cymothoidea.

Body usually broad and convex. Abdomen large, the last segment often scutiform. Caudal appendages broad, often lamellate or falciform, natatorial and applied to the sides of the last segment.

Family CYMOTHOIDÆ.

Body convex. Abdomen 4–6 jointed, the anterior segments rarely coalescent. Epimera conspicuous. Antennæ inserted beneath the head. Maxillipedes short, 3–4 jointed, operculiform, the terminal joints narrow and short. All the feet terminating in a large curved claw. Caudal appendages free, the margins rarely ciliated.

Sub-Family Cymothoinæ.

Abdomen multi-articulate, the segments free. Caudal appendages not ciliated.

Genus CERATOTHOA, Dana.

Body very convex. Head deeply encased in the anterior segment of the thorax (the antero-lateral lobes of which do not, however, reach to its anterior margin), narrowed anteriorly, and subacute at the extremity, which does not cover the bases of the antennæ. Abdomen at base very much narrower than thorax, six-jointed, the first five segments very short, the last broad, transverse. First (inner) pair of antennæ shorter than the second, with the bases in contact, first two or three joints dilated and flattened. Femoral joints of the last four pairs moderately thickened and dilated. Caudal appendages small. [*M.*]

486. **Ceratothoa trigonocephala.**

Cymothoa trigonocephala, Leach, Dict. des Sc. Nat., tome xii., p. 353; Milne-Edwards, Hist. Nat. des Crust., t. iii., p. 272 (1840); G. M. Thomson, Trans. N. Z. Institute, Vol. xi., p. 233; Heller, Reise der Novara, Crust., p. 148.

Head small, triangular, having the antero-lateral borders very concave, below the antennæ, and the front narrow but obtuse and a little more prominent than the base of the internal antennæ. Eyes very distinct. Anterior border of the first thoracic ring advancing slightly on the head in an angular form, so as to form a tooth on the middle line; antero-lateral prolongations of moderate length, narrowed in front, but rounded and not reaching the level of the base of the external antennæ. Length about 20 lines. [*M.-E.*]

Australia. Found also on the coasts of China and New Zealand.

Sub-Family Œgathoinæ.

Caudal appendages ciliated. Abdomen multi-articulate, the segments free.

Genus CODONOPHILUS, Haswell.

Body slightly convex, abdomen markedly narrower than the thorax, with six free articulations; terminal segment lamellar; epimera distinct though small; head rather narrower than the first segment of the thorax. Eyes very large; antennæ sub-equal, stout, inserted under the head. Mandibles with elongate palpi. Maxillipedes small, operculiform, three jointed. Thoracic limbs all anchor-like, with long dactyla. Posterior abdominal appendages free, uniramous.

487. Codonophilus argus.

Codonophilus argus, Haswell, l. c., p. 471, pl. xvi., fig. 1.

Eyes very large, extending on the under surface of the head. Thoracic appendages sub-equal, all with much elongate, curved and pointed dactyli. Ramus of abdominal appendages falciform with a few scattered cilia. Terminal segment scale-like, acuminate. Length $\frac{6}{32}$ in.

Found under the bell of a *Rhizostoma* in Port Jackson.

This species approaches *Ægathoa*, Dana, in many respects; but differs from it in the sudden narrowing of the body at the commencement of the abdomen, and the uniramous character of the caudal appendages.

Sub-Family Ourozeuktinæ.

Last segment of the abdomen transverse, the rest coalescent.

Genus OUROZEUKTES, Milne-Edw.

Body broad, depressed, oval. Head small, received into an excavation in the first segment of the thorax. Antennæ short and conical. First pair of abdominal appendages very large, covering the whole of the following pairs, and also folding round on each side to cover the lateral portions of the abdominal segments.

488. Ourozeuktes Owenii. A.M.

Ourozeuktes Owenii, M.-Edw., l. c., t. iii., p. 276, pl. xxxiii., fig. 8; Heller, Reise der Novara, Crustacea, p. 148.

Head very small; front trilobed; eyes circular and lateral, Thorax very broad (the fourth segment having more than six

times the breadth of the head. Abdomen terminated by a large foliaceous plate which is rounded posteriorly. Legs of the four first pairs slender, those of the three last pairs very broad, having the basos very broad and flattened, and the anterior border of the ischium prolonged in the form of an oval plate. Length nearly 2 in. [*M.-Edw.*]

Sydney (Heller).

489. **Ourozeuktes sp.?** **A.M.**

In the Australian Museum collection are two specimens of a species of *Ourozeuktes*, which differs so remarkably from Milne-Edwards' figure of the preceding species, that they are probably distinct. The outline of the body is not oval but broad in front and narrowing gradually behind, and the abdomen is about one and a half times as long as broad, and narrowing considerably posteriorly. I put it down provisionally under a new name—*Ourozeuktes pyriformis*.

Family ÆGIDÆ.

Body oval and convex. Epimera conspicuous. Abdomen 4–6 jointed. Antennæ inserted on the margin of the front. Maxillipedes elongate, 4–6 jointed, all the joints lamellate, the terminal ones broad and short. Three anterior pairs of feet sometimes terminating in a long curved claw or peduncle, often simply unguiculate; four posterior pairs never provided with long curved dactyli.

Sub-Family Æginæ.

Three anterior pairs of legs with long strong curved dactyli; the remainder with the dactyli small.

Genus ÆGA, Leach.

Body oval and convex. Eyes large. Front not prominent. External antennæ separated from each other by a process of the epistome. Internal antennæ approximated at base, very short, with the basal joints broad and flattened, occupying the front margin of the head. Caudal appendages flattened, reaching about to the extremity of the terminal segment.

490. **Æga cyclops.**

Æga cyclops, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi., p. 11.

Surface finely punctured. Breadth about two-fifths of total length. Segments of the thorax subequal, epimera of last five produced behind to a point. Abdomen little narrower than the thorax. Terminal abdominal segment sub-triangular—the apex rounded. Eyes confluent, occupying nearly all the upper surface of the head. Uropoda with the outer ramus smaller than the inner, narrow, ovate-acute; the inner broad and obliquely truncate; an acute triangular process arising from the peduncle extends beyond the middle of the inner rami. Length $\frac{1}{16}$ in.

Port Jackson.

Genus ROCINELA, Leach.

Like *Æga*, but with the eyes larger, meeting or almost meeting.

491. **Rocinela vigilans.** A.M.

Rocinela vigilans, Haswell, Proc. Linn. Soc. N.S.W., Vol. v., p. 472, pl. xvi., fig. 2.

Posterior thoracic segments broader than the anterior; epimera produced behind to an acute point. Terminal segment shield-like, smooth, margins entire, ciliated. Eye occupying all the upper surface of the head, and extending on its under surface on either side nearly to the margins of the buccal orifice. Antennæ separated at the base by a short frontal process; the superior about half the length of the inferior, the two basal segments of its peduncle together equal in length to the third segment; the flagellum longer than the peduncle, composed of about fifteen articuli; inferior pair with the flagellum more than twice the length of the peduncle. Maxillipedes with the terminal joints plate-like, a strong spine at the internal and distal angle of the first. Posterior thoracic limbs rather longer than the anterior pairs; femora long-ovate; dactyla rather short. Rami of caudal appendages unequal, the inner longer and broader than the outer; both ovate, obtusely pointed, ciliated on the margins. Length 1 in.

Holborn Island, near Port Denison, twenty fathoms.

Sub-Family Cirolaninæ.

All the legs with small dactyli.

Genus CIROLANA, Leach.

Convex, rather narrow, oblong-ovate. Eyes small, granulated. Internal antennæ very short. External antennæ long, inserted beneath the others, separated at the base by a narrow process of the epistome. Abdomen rather short, six-jointed.

492. **Cirolana lata.** A.M.

Cirolana lata, Haswell, l. c., Vol. vi., p. 12, pl. iv., fig. 1.

Surface finely punctured. Greatest breadth about half the total length. Head received into a depression in the anterior border of the first segment of the thorax. First segment of the thorax as long as the two following segments; posterior segments all short; epimera of last four produced backwards to an acute angle. Abdomen much narrower than thorax. Terminal segment triangular, sub-acute. Legs thick and very spinose. Outer ramus of caudal appendages much narrower than the inner, but of about equal length, sub-acute; inner slightly sigmoid, sub-acute, armed with a tooth on its inner edge; basal spine narrow, acute, about half the length of the inner ramus. Length $\frac{5}{8}$ in.

Off Broughton Islands, near Port Stephens, dredged in about twenty-five fathoms.

Family SPHÆROMIDÆ.

Body usually oblong-oval, convex. Epimera not distinct. Abdomen 1–2 jointed. Antennæ inserted on the front margin of the head. Maxillipedes elongated, 5–6 jointed and usually palpiform. Legs usually all with short dactyli, rarely with the dactyli of the two anterior pairs long and curved. Inner ramus of the caudal appendages immobile, or sometimes obsolete.

Sub-Family Sphæromina.

None of the legs with long dactyli. External ramus of the caudal appendages capable of being concealed under the internal ramus.

Genus SPHÆROMA, Latr.

Body oblong-oval, convex. Head broad. First segment of the body the largest, the rest subequal, marked on the sides with an oblique line indicating the coxæ; seventh segment without a dorsal spine. Terminal segment of the abdomen large, convex, rounded and entire at its extremity. Antennæ separated at the base by a small frontal process, the inner very broad at the base, the outer longer. Rami of the caudal appendages oval, lamellate, sub-equal. [*M.*]

493. Sphæroma gigas.

Sphæroma gigas, Leach., Dict. des Sci. Nat., t. xii., p. 346; Desmarest, Cons., p. 301; Milne-Edwards, Hist. Nat. des Crust., t. iii., p. 205; Miers, Cat. Crust., N.Z., p. 110.

Broad oblong-oval, slightly and regularly convex, nearly smooth. Head small, transverse-oblong, anterior margin with a very small lobe between the enlarged bases of the superior antennæ. First segment of the body rather the longest, the rest short, subequal, slightly tending backward on the sides and with the infero-posterior angle sub-acute. Inferior lateral margins of all the segments grooved. Abdomen two-jointed, the terminal joint large, convex, smooth, sub-triangular, rounded at the posterior extremity. Rami of the caudal appendages narrow-oval, rounded at the extremity. Colour light brown, margins of segments yellowish. Length nearly 1 in.

Australia. Found also in New Zealand, at the Falkland Islands, and Cape Horn.

494. Sphæroma Quoyana.

Sphæroma Quoyana, Milne-Edw., Hist. Nat., t. iii., p. 206; Heller, Reise der Novara, Crust., p. 137.

Body slightly granular. Last segment of the abdomen ornamented above with two longitudinal rows of four or five small tubercles, and with a thick obtuse transverse crest situated above its posterior extremity which is rounded. Rami of the caudal appendages small, pointed and granulated, the external ramus obscurely toothed on the external border. Length about 6 lines. [*M.-E.*]

Tasmania; Sydney. I have not seen any specimens of this or the following species.

495. **Sphæroma verrucauda.**

Sphæroma verrucauda, List Crust. Brit. Mus., p. 102 (1847); Dana, U.S. Explor. Exped., Crust., ii., p. 779, pl. lii., fig. 6 (1853); Miers, Cat. Crust. N.Z., p. 111 (1876).

Oblong-oval, convex, somewhat tomentose. Head very broad, transverse, with a small median frontal lobe between the bases of the antennæ as in *S. gigas*. Segments of the body short, faintly rugose on the sides. Abdomen very broad, finely granulous; terminal segment with the sides convergent, straight, truncate posteriorly, with three short longitudinal lines of large granules on its upper surface. Caudal appendages short, rami subequal, acute, the outer ramus serrated on its outer margin. Length about $\frac{1}{2}$ in. [*M.*]

Port Jackson; Hobson's Bay. Found also in New Zealand.

496. **Sphæroma (?) anomala.** A·M.

Sphæroma (?) anomala, Haswell, l. c., p. 473, pl. xvi., fig. 4.

Body smooth, strongly convex, frontal region prominent; last segment of the thorax longer than the preceding five, produced in the middle line behind to an obtuse angle; first abdominal segment with a broad, shallow excavation in its posterior border, defined on either side by a minute spinous process. Last abdominal segment with a transverse row of one central, larger, and two lateral, smaller tubercles; apex sub-acute, armed below on either side with a minute acute process. Rami of abdominal appendages ovate, sub-acute. Length $\frac{6}{16}$ in.

Port Jackson.

This species approaches *Isocladus* in the form of the last segment of the thorax, and *Cymodocea* in that of the last segment of the abdomen.

497. **Sphæroma lævis.**

Sphæroma lævis, Haswell, l. c., p. 473, pl. xvi., fig. 5.

Thorax nearly as broad as long, the first segment longer than the others, all the segments grooved and bent slightly backwards laterally—the lateral and posterior extremities of the segments sub-acute. Terminal segment of the abdomen smooth, convex, rounded distally. Caudal appendages narrow-lanceolate, blunt. Length $\frac{3}{16}$ in.

Bondi, near Sydney, on sandy beach.

498. **Sphæroma aspera.**

Sphæroma aspera, Haswell, l. c., p. 472, pl. xvi., fig. 3.

Body covered with larger and smaller granules. Head transverse, rounded in front, with a narrow lobe between the bases of the antennæ; first segment of the thorax as broad as the four following; a slight depressed line marking off the epimera. First segment of the abdomen with distinct lines marking the position of the coalesced segments, a prominent tubercle on the posterior margin on either side of the middle line. Last abdominal segment sub-triangular in contour, dilated anteriorly and ornamented with two slightly convergent irregular rows of minute tubercles; the apex rounded, with a rectangular notch on either side near the extremity. Caudal appendages with the rami rather unequal, the outer the smaller, both broad, sub-acute. Inner antennæ very broad at the base; flagellum with twelve segments. Outer antennæ equalling the inner in length; flagellum with eight segments. Length ¼ in.

Port Jackson.

Genus CYMODOCEA, Leach.

Moderately convex, slightly widening posteriorly. Head transverse, with a small median frontal lobe. Eyes small, lateral, situated on a lobe which is received into a corresponding excavation in the front margin of the first thoracic segment. Segments of the thorax short. Abdomen two-jointed; terminal segment tuberculate or rugose above, posterior margin notched with a median lobe in the centre of the notch. Caudal appendages thick, usually short; rami equal, or rather unequal. [*M.*]

499. **Cymodocea granulata.**

Cymodocea granulata, Miers, Ann. Mag. Nat. Hist. (Ser. 4), xvii., p. 229 (1876); Cat. Crust. N.Z., p. 114, pl. iii., fig. 5.

Moderately convex, nearly smooth. Head small; frontal lobe very small, obtuse. Lateral margins of the segments of the thorax all with a narrow marginal line, with the postero-lateral angles acute. Antero-lateral lobe of the first segment of the thorax narrow-triangulate, acute, produced forward beneath and beyond the eyes. Postero-lateral lobe of the last segment of the thorax produced backward, and terminating in a short spine

curved upwards; posterior margin of the segment nearly straight. Last segment of the abdomen broad, convex, granulous and slightly hairy, with a slight, more distinctly granulous elevation on its upper surface near the base, emargination quadrangular with the median lobe narrow. Rami of caudal appendages unequal, the inner not quite reaching to the extremity of the segment, broad, truncate at the end, the outer nearly as long again, narrowing to the extremity which is acute. Upper antennæ much enlarged at base, the second joint received into an emargination of the first joint. Length about ½ in. [*M.*]

Flinders' Island; also Tasmania. Found also in New Zealand.

500. **Cymodocea (?) Gaimardii.**

Sphæroma Gaimardii, Milne-Edwards, Hist. Nat. Crust., t. iii., p. 209.

Body smooth. Head extremely convex and recurved downwards. Marginal crest of the front scarcely distinct. Last segment of the abdomen regularly convex, and terminated by three teeth nearly of the same thickness and reaching the same transverse plane. Rami of the caudal appendages obtuse, with the borders smooth, very short (not nearly reaching as far as the posterior extremity of the body.) Length about an inch. [*M.-E.*]

Australia.

Three specimens marked "Tasmania, Dr. G. F. Storey," in the collection of the Australian Museum, may belong to this species, which differs from the ordinary examples of *Cymodocea* in having the terminal abdominal segment smooth. The mesial tooth which is broad and obtuse projects decidedly beyond the angles of the notch (lateral teeth in Milne-Edwards' description).

501. **Cymodocea pubescens.** **A.M.**

Sphæroma pubescens, M.-Edw., Hist. Nat. Crust., t. iii., p. 209.

Cymodocea pubescens, Haswell, Proc. Linn. Soc. N.S.W., Vol. v., p. 473, pl. xvii., fig. 1 (1881).

Strongly convex, tomentose. Frontal lobe obtuse. Antero-lateral angle of the first thoracic segment produced below the eye into a triangular acute lobe; postero-lateral angle similiarly produced, rounded. Lateral angles of the following segments of

the thorax produced, curved backwards, sub-acute. Penultimate segment of the abdomen produced behind into a rounded tubercle; a pair of sub-conical elevations on the last segment of the abdomen; notch very shallow, quadrangular; lobe pointed. Rami of caudal appendages rather unequal, both extending beyond the extremity of the segment, the outer the longer, the apex acute, curved outwards, the outer border with a conical tooth; the inner sub-acute. Basal joint of superior antennæ very broad, notched distally for the reception of the second joint. Flagellum of inner antennæ with twenty-seven articuli; that of the outer pair with twenty-one. Length of longest specimen 1 in.

Port Jackson; Port Stephens.

502. **Cymodocea aculeata.** A.M.

Cymodocea aculeata, Haswell, l. c., p. 474, pl. xvi., fig. 6.

Body strongly convex, finely granular. First segment of the thorax twice as broad as the rest. Last segment of the abdomen with two prominent tubercles situated near the middle line, and two smaller ones external to them. Terminal notch very deep, quadrangular, the lateral processes triangular, central process very prominent, projecting slightly beyond the extremity of the lateral. Inner antennæ with the basal joints very broad and compressed, flagellum with twenty-two or twenty-five articuli. Outer antennæ rather longer than the superior pair; flagellum with about fourteen to sixteen articuli. Rami of caudal appendages sub-equal, outer ramus sub-ovate, with the outer border straight, the inner convex; inner ramus oblong, emarginate. Length $\frac{9}{16}$ in.

Port Jackson.

503. **Cymodocea bidentata.** A.M.

Cymodocea bidentata, Haswell, l. c., Vol. vi., p. 8.

Body clothed with slender hairs which are scanty on the anterior thoracic segments, but longer (some about one-sixteenth of an inch) and more abundant on the abdomen and uropoda. Head strongly convex, smooth. First segment of the thorax longer than the two following together, ornamented with faint longitudinal lines of minute granules; lateral border strongly

ridged; antero-lateral angle acute, postero-lateral rather blunt. Following thoracic segments more or less distinctly granular. First abdominal segment distinctly granular, produced backwards towards the middle dorsal line, with a short thick process on either side. Terminal segment with two large tubercles near the middle, and a transverse line of three more near the distal border. Terminal notch wide, the median process prominent, broad, rounded at the extremity. Basal joints of the inner antennæ oblong, granular, separated by an acute frontal process; second joint small; flagellum about equalling the peduncle in length. Outer antennæ longer than the inner. Inner ramus of the uropoda longer than the outer, obliquely truncate, each terminating in a small acute spine. Length ½ in.

Griffiths' Point, Victoria.

This species bears some resemblance to *C. Latreillii*, of Leach, but the blunt form of the terminal lobe, as well as the shape of the uropoda, etc., sufficiently distinguishes it.

504. **Cymodocea coronata.** A.M.

Cymodocea coronata, Haswell, l. c., Vol. vi., p. 10.

Head and thorax as in *C. bidentata*, but with the hairs shorter. Abdomen rather depressed, covered with short hairs, ornamented with six small pointed tubercles arranged in a circle—two near the posterior border of the first segment, the rest on the second. Terminal notch very wide—nearly a third of the breadth of the abdomen; mesial lobe very large, dilated at its base, but narrowing towards its apex which is blunt. Mobile ramus of uropoda much shorter than the immobile ramus, sub-falciform, truncate. Inner ramus very long, extending far beyond the extremity of the abdomen, long-ovate, apex rounded. Length ½ in.

Griffiths' Point, Victoria.

An ally of *C. aculeata*, mihi, but distinguished, besides other points, by the greater relative shortness of the mesial lobe and the smallness of the mobile ramus of the uropoda.

505. **Cymodocea tuberculata.** A.M.

Cymodocea tuberculata, Haswell, l. c., p. 10, pl. iii., fig. 8.

Greatest breadth exactly half the total length. Head and first segment of body smooth—the latter equalling in length the three

following segments together. Last six segments of the thorax each ornamented with a regularly arranged row of tubercles—their epimeral portion clothed with a long pubescence. First segment of the abdomen with two short triangular processes projecting backwards from its posterior border, separated from one another by an interval equal to a fifth of the breadth of the segment; on either side of this another, less prominent, tooth. Last segment with two compressed, irregular elevations near its proximal end, each formed by a cluster of five teeth; rest of the surface smooth. Lateral angles of the notch prominent, acute, projecting beyond the extremity of the mesial lobe, which fills up all the notch and is cemented to its borders except at the apex, which is rounded. Outer ramus of the uropoda very broad, spoon-shaped, closely fringed with hairs, inner narrower and shorter, but projecting a little beyond the angles of the notch. Length about $\frac{1}{2}$ in.

Port Stephens. Five fathoms.

Genus Cerceis, Milne-Edwards.

Allied to *Sphæroma* and *Cymodocea*, but with the body longer in proportion to its breadth, the head more elongated and of a subtriangular shape, and the basal joints of the inner antennæ longer.

506. Cerceis tridentata.

Cerceis tridentata, Milne-Edwards, Hist. Nat. Crust., t. iii., p. 221.

Head very much narrowed in front. Last joint of the abdomen convex, covered with a light down, almost triangular and terminated by three closely approximated teeth, the middle one of which is the shortest. Caudal appendages habitually exserted on each side, but capable of being retracted; the inner ramus transversely truncated at the end, the external much longer and pointed. [*M.-E.*]

King Island (Mus. Paris).

507. Cerceis bidentata.

Cerceis bidentata, Milne-Edwards, l. c.

Head broader anteriorly. Last joint of the abdomen smooth, convex, presenting above two small bosses, and terminating in

two teeth separated by a deep, broad and semi-circular excavation. Rami of the caudal appendages foliaceous and each ending in a point, the external a little longer than the internal. Length about 4 lines. [*M.-E.*]

Australia (Mus. Paris).

508. **Cercels acuticaudata.** A.M.

Sphæroma ? acuticaudata, Haswell, l. c., Vol. vi., p. 11., pl. iii., fig. 9.

Greatest breadth of body about two-thirds of the total length. Head broader than long, bordered anteriorly and laterally by a thickened margin which is continuous with the eye; an obscure, mesial, longitudinal carina on the anterior half, and a number of smooth, flattened tubercles. Surface of the thoracic segments smooth, each bordered with short hairs; first segment not so long as the two following taken together; lateral borders of thoracic segments carinate; the postero-lateral angles acute. Last segment of the abdomen slightly dilated—an acute spine about its centre, below which is a transverse band of short hairs; a deep, rounded, median posterior notch, with prominent acute angles. Basal joint of internal antennæ much compressed, not much longer than broad, separated from its fellow by a small rounded frontal lobe; second joint sub-triangular, more than half the length of the first; third about half the length of the second and slender; flagellum rather shorter than the peduncle. Outer antennæ more than half the length of the body; terminal joint of the peduncle longer than the rest. Outer ramus of uropoda longer than the inner, projecting far beyond the extremity of the abdomen, lanceolate-acute, with an acute tooth on its inner border. Inner ramus extending slightly beyond the extremity of the abdomen, acuminate. Length $\frac{3}{4}$ in.

Griffiths' Point; Port Philip.

This species is certainly a *Cerceis*, and is evidently a close ally of *C. bidentata*, from which it differs in having a mesial spine in place of two small bosses on the upper surface of the last segment of the abdomen. *Sphæroma orientalis* of Dana is likewise nearly related.

509. **Cerceis trispinosa.** A.M.

Cymodocea trispinosa, Haswell, l. c., Vol. vi., p. 9, pl. iii., fig. 7.

Surface nearly smooth. Greatest breadth nearly half the length. First segment of the thorax scarcely so long as the second and third together. Outer border of all the thoracic segments ridged; epimeron of last segment produced backwards into an uncinate process. First abdominal segment short, with the divisional lines distinct; its posterior border with a wide shallow excavation bounded on either side by a rounded tooth with an obscure denticle internal to it. Last abdominal segment granular and hairy, with a low elevation about its middle. Posterior notch deep, its angles produced and acute, a little more prominent than the mesial lobe, which is conical and acute. Outer ramus of uropoda longer than the inner, ovate-lanceolate, acute, inner extending beyond the extremity of the abdomen, acuminate. Colour uniform light red. Length $\frac{7}{16}$ in.

Griffiths' Point, Victoria.

This species seems to be intermediate between *Cymodocea* and *Cerceis*. In the form of the abdomen and caudal appendages it agrees well with Milne-Edwards' description of *C. tridentata*, but the head is certainly not "très retrèci en avant," and Milne-Edwards' species does not appear to possess the curious lateral processes on the last segment of the thorax.

Genus Cilicœa, Leach.

General form of the body as in *Cymodocea*. First segment of the abdomen produced behind into a longer or shorter mesial process.

510. **Ciliocea tenuicaudata.** A.M.

Cilicœa tenuicaudata, Haswell, l. c., Vol. v., p. 475, pl. xvii., fig. 2.

Surface obscurely granular. Postero-lateral angles of the segments of the thorax sub-acute. Penultimate abdominal segment obscurely tubercular; median spine very long, extending far beyond the extremity of the abdomen, narrow, blade-like, bifurcate at the tip. Last segment of the abdomen with two rounded mammiform elevations; a deep mesial excavation at its

posterior extremity. Peduncle of caudal appendages with a short spine representing the internal ramus; outer ramus ciliate, narrow, slightly curved backwards, extending rather beyond the extremity of the mesial spine, bifurcate at the tip. Flagella of antennæ each with about ten articuli. Length $\frac{1}{16}$ in.

Port Jackson.

511. **Cilicœa crassicaudata.**

Cilicœa crassicaudata, Haswell, l. c., Vol. v., p. 475, pl. xvii., fig. 3.

Surface finely granular. Postero-lateral angles of the thoracic segments blunt. Penultimate segment of the abdomen slightly swollen; median spine rather short, not extending beyond the middle of the uropoda, thick, clothed with short cilia, apex entire, blunt. Last segment of the abdomen with two mammiform elevations; its posterior extremity deeply notched; notch with a low mesial lobe. Basal segment of the caudal appendages with a blunt process on its inner border; mobile ramus sub-cylindrical, ciliated, curved inwards, extending beyond the extremity of the median spine, apex rounded, entire; immobile ramus rudimentary. Length $\frac{1}{2}$ in.

Holborn Istand, 20 fathoms.

512. **Cilicœa hystrix.** A.M.

Cilicœa hystrix, Haswell, l. c., Vol. vi., p. 3, pl. iii., fig. 1.

Head and body armed above with numerous slender, needle-like spines. Head short and broad, armed anteriorly with close-set, short, delicate spines, and with a pair of thicker bifurcate horns, directed upwards, forwards, and outwards near the posterior margin. First segment of the thorax with a similar pair of bifurcate horns, its lateral border prominent, tridentate; following segments short, each with a single transverse row of slender spines, the lateral angles very acute—that of the fifth segment bifurcate. First abdominal segment with two prominent spines on its proximal dilated portion—the posterior process extending nearly as far as the extremity of the abdomen, forked at the tip. Last segment with two rounded elevations, each armed with

several spines, with a deep, rounded terminal notch, immediately above which is a prominent spine. Eyes large and prominent; antennæ subequal, nearly one-third of the length of the body. Mobile ramus of uropoda bifurcate, the outer branch short, tooth-like, the inner long, slender, spiniform; immobile ramus broad proximally, but slender and spiniform distally, its outer border armed with two acute teeth, its inner with one. Length ¾ in.

Port Stephens—five fathoms.

513. **Cilicœa spinulosa.** A.M.

Cilicœa spinulosa, Haswell, l. c., p. 4, pl. iii., fig. 3.

Head large and dilated, covered with rounded and pointed tubercles. First segment of the thorax much broader than the rest, armed with a number of short blunt spinules, and with a prominent bifid tubercle on either side; its lateral process obscurely bilobed. Following segments each armed with a row of short spinules, which are more numerous and smaller on the last three segments; epimeral processes prominent, subacute, except that of the fifth, which is emarginate. First segment of the abdomen ornamented at the base with a double transverse row of tubercles; posterior process finely granular, sub-cylindrical, slightly enlarged or bifid at the apex, extending far beyond the extremity of the abdomen, but not so far as the extremity of the uropoda. Terminal segment having its lateral dilatation armed with two short thick spinules; terminal notch deep. Antennæ sub-equal, about one-third of the length of the body. Uropoda with the movable ramus slender, bifurcate, the outer branch short, tooth-like, the inner longer, slightly curved outwards, subacute; immobile ramus a little longer than the mobile ramus, broad at base, but tapering to the apex, which is curved outwards and acute. Length ½ in.

Port Stephens and Port Jackson.

A near ally of the preceding species. Specimens from the same localities which are probably the females of this species (Plate iii., fig. 2) or of *C. hystrix* are distinguished by having all the spines of the body replaced by tubercles, by wanting the posterior process of the first abdominal segment, and by having the rami of the uropoda smaller.

514. Ciliocea curtispina. **A.M.**

Ciliœa curtispina, Haswell, l. c., p. 5, pl. iii., fig. 4.

Surface smooth. Head large, strongly arched. First and fourth segments of the thorax much broader than the others; epimera very distinct—their outer borders carinated. First segment of the abdomen finely granular, marked laterally with three depressed divisional lines, with two teeth on either side on its posterior border; posterior process short, blunt, rounded. Terminal segment having the lateral elevations pointed; terminal notch concealed from above by a prominent trilobed process the middle lobe of which is the largest. Internal antennæ separated by a tolerably large lobe; basal segment of the peduncle very large, more than half the length of the head, not much dilated. armed distally and internally with a blunt tooth; second segment scarcely half the length of the first, armed terminally with three small teeth; third segment very small; flagellum much shorter than peduncle. Outer antennæ more than a third of the length of the body; last segment of the peduncle the largest; flagellum longer than peduncle. Mobile ramus of uropoda stout, truncate, armed with two acute teeth at its extremity and one about the middle of its outer border. Inner ramus very short, closely applied to the border of the terminal segment, ending in two sub-acute teeth. Length about $\frac{1}{3}$ an inch.

Port Philip.

515. Ciliocea crassa. **A.M.**

Ciliœa crassa, Haswell, l. c., p. 5.

Surface covered with rounded granules and a short pubescence. First segment of the thorax as long as the two following; lateral angles of the thoracic segments rather prominent, sub-acute. Process of first abdominal segment very thick, closely applied and cemented to the surface of the last segment, extending beyond the apex of the latter and ending in a broad, bifid extremity. Last segment of the abdomen with two conical elevations; terminal notch wide; mesial lobe triangular, acute. Immobile ramus of uropoda rudimentary, mobile ramus notched externally towards the apex, and with a low blunt tooth on the inner border. Colour

light brown, with many of the granules and a line bordering the process of the first abdominal segment bright crimson. Length 1 in.

Port Jackson.

Genus Zuzara, Leach.

General form of the body as in *Cymodocea*. Last segment of the thorax produced in the male into a mesial process. Rami of caudal appendages large.

516. Zuzara diadema.

Zuzara diadema, Leach., Dict. des Sci. Nat., t. xii., p. 544; Desmarest, Cons., p. 299; Milne-Edwards, Hist. Nat. Crust., t. iii., p. 212.

Body smooth. Prolongation of the last thoracic segment dilated in the form of a diadem. Outer ramus of the caudal appendages ending gradually in a rounded point. [*Leach.*]

Australia.

I have seen no specimens of this or the following species.

517. Zuzara armata.

Cymodocea armata, Milne-Edwards, Hist. Nat. Crust., t. iii., p. 215, pl. xxxi., fig. 16 (1840).

Seventh segment of the thorax very large and prolonged above the abdomen in the form of a conical tooth. Mesial tooth of the last segment of the abdomen prominent and bifid; external ramus of the caudal appendages smaller than the internal. Length 3 lines. [*M.-E.*]

Seas of Australia.

518. Zuzara integra. A.M.

Zuzara integra, Haswell, l. c., p. 6, pl. iii., fig. 6.

Male.—Surface nearly smooth. Body slightly depressed, increasing a little in breadth posteriorly, greatest breadth about half the total length. Head moderately convex, with a few flat granulations. First segment of the thorax nearly as broad as the two following; all the segments of the thorax sometimes marked laterally with a series of faint longitudinal impressed lines, sometimes completely smooth. Epimera very distinct, their lateral angles produced, sub-acute, that of the penultimate segment much

produced backwards. Last segment of the thorax produced in the middle line behind into a rather slender process, which is about equal in length to the three preceding segments, subcylindrical, but depressed dorso-ventrally, not dilated at the apex, which is truncate. First segment of the abdomen short, with well-marked divisional lines. Last segment convex, marked in the middle line near the proximal border with a faint key-hole-shaped depression, surrounded by a very obscure, granular elevation; terminal notch with a prominent narrow, clavate, mesial process. Inner antennæ separated at the base by a very small frontal process; basal segment of peduncle broad; second shorter and narrower; third slender, cylindrical, longer than the second, but not quite so long as the first and second together; flagellum rather longer than the peduncle. Outer antennæ with the peduncle stout, last joint the longest; flagellum nearly twice as long as the peduncle. Rami of the uropoda thin and leaf-like, immobile ramus falciform with a truncate apex; mobile ramus ovate-lanceolate in outline, concave upwards, with a raised margin, much longer than the inner, and extending far beyond the extremity of the abdomen.

Female.—Differs from the male mainly (1) in wanting the posterior prolongation of the last thoracic segment, (2) in the absence of the terminal notch, (3) in the smaller size of the uropoda, the rami of which are nearly equal, the mobile ramus being capable of being entirely concealed under the inner.

A common species in Port Philip; also found in Tasmania.

I have placed this and the following species in the same genus with *Zuzara diadema* and *Z. semi-punctata* of Leach,* all three being characterised by the prolongation backwards of the last segment of the thorax in the male, and by the possession of a posterior mesial notch occupied by a slight median process. Both *Z. integra* and *Z. emarginata* have the outer ramus of the uropoda capable of folding underneath the inner. The present species differs from *Z. semi-punctata* in the process of the last thoracic segment not being granulous at the base or punctated above, and in having the outer ramus of the uropoda truncate instead of pointed. From *Z. diadema* it differs in not having the process of the last thoracic segment terminally dilated.

* Dictionnaire des Sciences Naturelles, tome xii., p. 344.

519. **Zuzara emarginata.** A.M.

Zuzara emarginata, Haswell, l. c., p. 7, pl. iii., fig. 5.

Surface nearly smooth, very finely punctate. Head rather prominent, narrowing gradually towards the front. First segment of the thorax not quite so long as the two following taken together; sixth segment as long as the first; seventh segment very large, nearly concealing the abdomen; median posterior process very long, extending far beyond the extremity of the abdomen, slightly curved downwards, emarginate at apex—a prominent, acute tooth on either side of the segment near the base of the process. Last segment of the abdomen with a rounded swelling on either side. Terminal notch deep—about one-sixth of the width of the abdomen; mesial lobe very prominent, extending beyond the boundaries of the notch, truncate and faintly emarginate. Basal joint of the internal antennæ very large, notch for second joint wide, with a prominent tooth on either side; third joint slender, not longer than the second, flagellum shorter than the peduncle. Outer antennæ much longer than the inner, more than a third of the length of the body, fourth and fifth segments of the peduncle subequal, flagellum longer than the peduncle. Outer ramus of uropoda subovate—the outer border nearly straight, the inner convex, the apex subacute; inner ramus of about the same length as the outer, bent directly backwards about the middle of its length, apex subacute; both rami fringed with hair. Colour light red with darker spots on the thorax. Length ½ in.

The females and young males have the seventh thoracic segment small, the posterior process short or absent, the mesial lobe less prominent, and the uropoda relatively smaller.

Griffiths' Point, Western Port.

This species is apparently a tolerably near ally of *Cymodocea armata* of Milne-Edwards, but in the latter species the posterior prolongation of the seventh thoracic segment is described and figured as conical, and the posterior lobe as bifid.

Genus Calyptura, Haswell.

General form of the body as in *Cymodocea*. Last segment of the thorax produced behind into a broad plate, covering the abdomen.

520. **Calyptura carnea.** A.M.

Calyptura carnea, Haswell, l. c., p. 476, pl. xvii., fig. 4.

Moderately convex, granulated. Head of moderate size, rather broader than long; eyes oval, received into a notch in the anterior border of the first segment of the thorax. First segment of the thorax broader than the succeeding five; lateral angles blunt. Last segment of the thorax produced into a broad shield extending beyond and concealing the abdomen, narrowing behind to a blunt apex, convex anteriorly, nearly flat in its posterior half, but with a slight median longitudinal ridge. Abdomen short, bisegmented, concealed by the last thoracic segment; last segment with a quadrangular median posterior notch, in the centre of which is a squarish lobe. Caudal appendages extending slightly beyond the extremity of the last thoracic segment; rami subequal, ciliated on the edges, the inner the longer, truncate, with an angular tooth on its inner border; outer ovate, pointed, the extremity slightly curved outwards. Inner antennæ broad at the base, separated by a small frontal lobe, flagellum of eleven or twelve articuli. Outer antennæ longer than the inner, flagellum of fourteen or fifteen articuli. Colour crimson. Length $\frac{1}{2}$ in.

Port Jackson; Port Stephens.

Genus AMPHOROIDEA, Milne-Edwards.

Body convex. Head quadrilateral, broader than long. Last segment of the abdomen and caudal appendages as in *Sphæroma*. Basal joints of the inner antennæ expanded into a broad plate.

521. **Amphoroidea australiensis.**

Amphoroidea australiensis, Dana, U. S. Explor. Exped., Crust., Vol. ii., p. 785, pl. lii., fig. 14.

Near *A. typica*. The lamellar basal joint of the anterior antennæ sparingly oblong, the apical margin arcuate, the outer angle rounded. Flagellum of inferior antennæ 20-jointed. Abdomen emarginate behind, the emargination triangular; antero-lateral margin of last segment a little sinuous in outline. Caudal appendages extending somewhat beyond line of extremity of abdomen; inner lamella straight truncate; outer acuminate, narrower than the same lamella in the *typica*. [*D.*]

New South Wales.

Tribe ANISOPODA.

Body sub-cylindrical or dorso-ventrally compressed. The thoracic legs consisting of an anterior series of four and a posterior of three pairs. Segments of the abdomen, except the last, usually short, sometimes more or less coalescent. Abdominal appendages of the first five pairs foliaceous and branchial; those of the last pair operculiform, lamellate, styliform or obsolete. Terminal segment usually large, destitute of appendages.

Sub-Tribe ARCTURIDEA.

Posterior pair of abdominal appendages operculiform, covering the branchial laminæ.

Family ARCTURIDÆ.

Sub-Family Arcturinæ.

Abdominal opercula closely appressed to the ventral surface of the abdomen.

Genus ARCTURUS, Latr.

Body sub-cylindrical. Segments of the thorax usually more or less tuberculated, sometimes sub-equal, sometimes with the fourth very long. External antennæ large, with a stout peduncle and a flagellum of few or many articuli.

522. Arcturus longicornis. A.M.

Arcturus longicornis, Haswell, l. c., Vol. vi., p. 194.

None of the segments of the thorax greatly elongated. Head broader than long, longer than the first segment of the thorax; frontal border deeply concave. A pair of pointed spinous tubercles on the head, on each segment of the thorax, and on each of the first two segments of the abdomen. Terminal segment sub-acute, with a pair of rounded tubercles near its apex. Internal antennæ longer than the head; first segment of the peduncle short and thick, second and third segments sub-equal. Outer antennæ with the peduncle equal in length to the head and thorax—the fifth joint much longer than all the rest together. Length, exclusive of antennæ, more than two inches.

The somewhat mutilated specimen from which the above description was taken, was in the Australian Museum collection without locality attached, but pinned on a sheet of cork together with a number of specimens from Tasmania, and perhaps came from that colony. It differs from *A. Baffinii*, Sabine, as figured by Milne-Edwards, in the great length of the terminal segment of the peduncle of the outer antennæ—the fourth and fifth segments being represented as sub-equal in the figure of that species.

523. **Arcturus brevicornis.** A.M.

Arcturus brevicornis, Haswell, l. c., p. 195, pl. iv., fig. 5.

Head rather shorter than the first three segments of the thorax, smooth; first three segments of the thorax subequal, short, each with one or two minute, rounded tubercles above; fourth segment much elongated, with a tubercle above—between the anterior end and the middle. Abdomen as long as the last three segments of the thorax. Outer antennæ thick, about as long as the head and first four segments of the thorax, second and third segments sub-equal, fourth the longest, fifth longer than the second; fourth and fifth each with three or four short setæ below; flagellum about two-thirds of the length of the last segment. Anterior limbs subequal, slender, first slightly stouter than the rest. Length of body about $\frac{3}{8}$ths in.

Off Broughton Island, near Port Stephens, dredged in about twenty-five fathoms.

Sub-Family Anthurinæ.

Abdominal opercula not closely appressed to the ventral surface of the body, but free and partly covering the sides of the abdomen.

Genus Paranthura.

Like *Anthura*, except in the structure of the pleon which has the several segments distinctly articulated with each other, and carries the normal number of pleopoda.

524. **Paranthura australis.**

Paranthura australis, Haswell, l. c., p. 477, pl. xviii., fig. 1.

Eyes very minute. Antennæ extremely short, with rudimentary flagella, the internal pair rather the longer. First pair of

thoracic limbs with the carpus somewhat produced superiorly and distally; propodos ovate, dilated proximally; the palm armed with a row of five stout spinules. Second pair rather smaller than the first and of similar shape; palm armed with six ciliated spinules. Third pair smaller than the second. Caudal scales sub-circular; ramus of caudal appendages ovate, sub-acute, hairy. Terminal segment rounded. Length about $\frac{1}{2}$ in.

Port Jackson.

525. **Paranthura (?) crassicornis.**

Paranthura crassicornis, Haswell, l. c., p. 478, pl. xviii., fig. 5.

Eyes very small. Internal antennæ very short, about half the length of the head; flagellum with several short articuli. External antennæ twice as long as the internal pair; flagellum thick, twice as long as the peduncle, composed of numerous articuli. First pair of thoracic limbs larger than the others; propodos ovate. Second and third pairs rather smaller than the first, and of similar shape. Following pairs sub-equal, with the dactylos long and falciform. Length $\frac{5}{16}$ in.

Port Jackson.

Differs from *Paranthura* in the form of the outer antennæ.

Genus HALIOPHASMA, Haswell.

Body sub-cylindrical, depressed, thoracic segments sub-equal. Inner antennæ much shorter than the outer, with multi-articulate flagellum. Mandibles with a palp. Maxillipedes small, sub-operculiform. First pair of thoracic limbs large, sub-chelate, the rest simple or the second imperfectly sub-chelate. Last pair of abdominal appendages broad, operculiform, biramous—the inner ramus biarticulate, the outer scale-like. Terminal segment squamiform.

Differs from *Paranthura* in the possession of a well-developed flagella in both pairs of antennæ or the outer pair only, and in the form of the second and third pairs of pereiopoda.

526. **Haliophasma purpurea.**

Haliophasma purpurea, Haswell, l. c., p. 476, pl. xviii., fig. 3.*

Head and first thoracic segment flattened; last thoracic segment shorter than the others. Inner antennæ as long as the

* Not fig. 2, as occurs in the "Explanation of the Plates" in the paper referred to. Fig. 2 should be *H. maculata*.

head, slender; flagellum rudimentary. Outer antennæ nearly twice as long as the inner pair; the peduncle very stout, the flagellum with seven articuli. First pair of thoracic limbs very thick, with stout, ovate propodos and strong dactylos; the following pairs all non-subchelate, rather short, decreasing in size posteriorly. Terminal segment rounded at the apex, with three longitudinal dorsal ridges. Colour reddish-purple. Length $\frac{7}{8}$ in.

Port Jackson.

527. **Haliophasma maculata.**

Haliophasma maculata, Haswell, l. c., p. 477, pl. xviii., fig. 2.

Head and first segment of the thorax slightly flattened. Inner antennæ as long as the head; flagellum with about twenty articuli. Outer antennæ twice as long as the inner; flagellum with numerous articulations. First pair of thoracic limbs large, similar to those of the preceding species; following pairs rather long, the first two prehensile. Terminal segment not longitudinally ridged. Terminal segment, caudal appendages and caudal scale fringed with long hairs. Colour light yellow, with black blotches. Length $\frac{3}{4}$ in.

Port Jackson; Port Stephens; Griffiths' Point, Victoria.

Sub-Tribe TANAIDEA.

Posterior pair of abdominal appendages more or less styliform, almost terminal, rarely obsolete.

Family TANAIDÆ.

First or second pairs of legs sub-chelate, the rest not provided with long curved dactyli. Anterior five pairs of abdominal appendages sub-natatorial, the last pair styliform or biramous.

Sub-Family Tanainæ.

Body linear, the first segment of the thorax often oblong, and the head small. Caudal stylets long.

Genus PARATANAIS, Dana.

First pair of antennæ not provided with a flagellum. First pair of legs strongly dilated, the rest unguiculate. Caudal stylets biramous, the rami unequal, provided with one or more joints.

528. **Paratanais tenuicornis.**

Paratanais tenuicornis, Haswell, l. c., Vol. vi., p. 194, pl. iv., fig. 3.

Antennæ short; inner pair stout, the basal segment about three times as long as the second, and the latter twice as large as the last, which is very small. Outer antennæ more slender than the inner; last joint smaller than the penultimate, which again is as long as the two preceding taken together. First pair of legs very stout; propodos curved, dactylos slightly geniculate. Caudal appendages short, flagellum with seven articuli. Length about ¼ in.

Port Stephens.

Genus APSEUDES, Leach.

Body dorso-ventrally compressed. Upper antennæ with two flagella; lower with one. First pair of legs sub-chelate; second pair laminate at the extremity; the rest unguiculate. Caudal appendages with a long multi-articulate flagellum and a shorter secondary flagellum.

529. **Apseudes australis.**

Apseudes australis, Haswell, l. c., Vol. vi., p. 193, pl. iv., fig. 2.

Head broad; a triangular acute rostrum between the bases of the antennæ, with a mesial and two lateral shallow grooves; a short spine in the middle of the epistome. Thoracic segments transverse, the epimera large, sparsely setose. Abdomen ornamented with a few longish, fine hairs; terminal joint as long as all the rest together, twice as long as broad, rounded at the extremity. First joint of the internal antennæ long, compressed, longitudinally grooved; second joint scarcely one-third of the length of the first; third very small; flagellum as long as peduncle; secondary flagellum nearly two-thirds of the length of the principal flagellum. Lower (outer) antennæ scarcely longer than the flagellum of the upper; the second joint of the flagellum the largest, a lamelliform ovate appendage fringed with slender hairs situated at its inner and distal angle; third joint very small; fourth nearly as long as the second, but narrower; last joint smaller than the fourth; flagellum equal in length to about two-thirds of the peduncle, ornamented with slender hairs. First pair of thoracic limbs, with the merus, carpus and propodos

compressed, the merus triangular, with its distal border transverse, with a strong seta at each distal angle, and a few fine hairs; carpus smaller, with its distal border oblique, a strong seta at its supero-distal angle; propodos narrower than the carpus but longer, its distal border short, transverse, a strong spine on either side of the point of insertion of the dactylos; rather compressed, slightly hooked at the end. Second pair of thoracic limbs with the basos very broad, a small tooth on its posterior border; a tooth on the lower border of the merus; carpus triangular, elongate; propodos dilated, its digital prolongation with a rounded lobe near the base. Length about ½ in.

Broughton Islands, dredged in about twenty-five fathoms.

Sub-Family Stenetrinæ.

Body dorso-ventrally compressed, of nearly equal breadth throughout. Caudal appendages short, the rami not multi-articulate.

Genus Stenetrium, Haswell.

Body dorso-ventrally compressed; abdomen short, one-jointed. Head with a short rostrum. Antennæ inserted on the anterior margin of the head; internal pair very short; external pair very long, both with well-developed flagella, and with a small one-jointed basal appendage. Mandibles provided with a palp. Maxillipedes expanded, operculiform. First pair of thoracic limbs with a large prehensile manus; following pairs ambulatory. First pair of abdominal appendages broad, operculiform. Caudal appendages biramous, inserted on the border of the shield-like abdomen near the extremity.

530. Stenetrium armatum.

Stenetrium armatum, Haswell, l. c., p. 479, pl. xix., fig. 1.

Cephalon armed on either side with a prominent dorso-ventrally compressed, acute spine, curved outwards and forwards. Antero-lateral angles of the first thoracic segment produced forwards, acute; those of the second segment slightly produced; postero-lateral angle of the penultimate segment slightly produced backwards. Penultimate segment of the abdomen rudimentary; second as long as the three last thoracic segments, its lateral

border marked behind the middle by an angular notch, bounded behind by an inconspicuous acute spine; a short, rounded mesial lobe at the posterior extremity. Eyes narrow, oblique. Internal antennæ scarcely as long as the three basal joints of the external pair, flagellum longer than the peduncle. External antennæ about four times as long as the inner pair, longer than the body; basal joint of the peduncle produced externally and distally into a slender acute process; second joint similarly produced, the process ending in a hair-like appendage; flagellum about equalling the peduncle in length, formed of numerous articuli which are very short proximally and increase slightly in length towards the distal end. Maxillipedes with the four basal joints forming a broad operculum; terminal joint well-developed. First pair of thoracic limbs in the male very large; ischium, meros and carpus sub-equal, the meros produced infero-distally into an acute process; propodos large, irregularly ovate, palm defined by a long acute spine, and armed in addition with a bifid denticle situated about its middle; dactylos powerful, sub-acute. Following pairs of thoracic limbs sub-equal. Inner ramus of caudal appendages longer than the outer, both lanceolate, armed laterally with slender hairs. Length $\frac{1}{2}$ inch.

The female has the first pair of thoracic limbs smaller than in the male, the palm unarmed, concave, defined by a projecting acute angle.

Port Jackson; Port Stephens; Griffiths' Point (Victoria).

531. **Stenetrium inerme.**

Stenetrium inerme, Haswell, l. c., p. 480, pl. xix., fig. 2.

Head transverse, rostrum sub-acute. Lateral borders of anterior thoracic segments not much produced, bilobed. Lateral border of last abdominal segment entire; with an obscure, rounded, mesial lobe. Eyes rounded. Internal antennæ very slender, less than a quarter of the length of the external pair; basal joint of the peduncle very short and broad, second narrower and slightly longer, third scarcely distinguishable from the flagellum; flagellum about twice as long as the peduncle. External antennæ longer than the body, the three basal joints of the peduncle short and stout, the third the longest of the three, and provided distally and externally with a short, acute spine;

flagellum shorter than the peduncle. Penultimate joint of the maxillipedes not expanded. First pair of thoracic limbs large; propodos sub-triangular in outline, the palm transverse, concave, armed with a few short bristles, and defined by a prominent acute tooth; dactylos much longer than the palm. Following pairs of thoracic limbs decreasing slightly in length posteriorly. Caudal appendages with the inner ramus longer than the outer, both broad-lanceolate, truncate, with one or two lateral notches, and a few long, slender setæ. Length about $\frac{5}{16}$ in.

Port Jackson.

Tribe LÆMODIPODA.

[Amphipoda Aberrantia.]

Head coalescent with the first segment of the thorax. Maxillipedes modified to form a lower lip, with long palpi. Branchiæ, gnathopoda, and pereiopoda as in the *Amphipoda Normalia*, but the coxæ not squamiform, and the first and second pairs of pereiopoda weak, rudimentary, or absent. Abdomen rudimentary, without distinct appendages.

Family I. CAPRELLIDÆ.

Body linear. Coxæ fused with the pereion. Branchial sacs attached to the first two or three segments of the pereion.

Genus PROTO, Leach.

Body cylindrical. Cephalon confluent with the first segment of the pereion. Pleon rudimentary. Mandibles having an appendage. Gnathododa sub-chelate, having branchiæ attached to the second pair. Pereiopoda all developed; branchiæ on the two anterior pairs; two posterior pairs subequal; dactyli capable of being impinged against the anterior margin of the propoda. Two anterior pairs of pleopoda rudimentary, biarticulate, in the male styliform; rest obsolete.

532. Proto Novæ-Hollandiæ.

Proto Novæ-Hollandiæ, Haswell, Proc. Linn. Soc. N.S.W., Vol. iv., p. 275, pl. xii., fig. 3.

Animal smooth, constricted at the joints. Superior antennæ about one-third of the length of the body; basal joint of

peduncle thick, shorter than the others; second joint the longest; flagellum shorter than the second and third segments of the peduncle. Inferior antennæ more than half the length of the superior; peduncle more than twice as long as the flagellum. First pair of gnathopoda with the propodos broad, the palm oblique, slightly convex, armed with a series of short spines, and defined by a strong tooth surmounted by a spine. Posterior pair with the propodos ovate, swollen, three times as long as that of the first pair. First pair of pereiopoda slender, as long as the second and third segments of the pereion, with a slight tooth on the posterior margin of the propodos. Second pair much larger than the first or third, rather longer than the cephalon and the first two segments of the pereion, the carpus, propodos and dactylos short, the propodos armed with four spines and a row of serrations on its anterior border. Third pair very slender, equal to the first in length. Fourth and fifth pairs sub-equal, of the same length as the second, but stouter; a few spines on the carpus and propodos. Length about 7 lines.

Port Jackson.

Genus Protella, Dana.

Body cylindrical. Cephalon confluent with the first segment of the pereion. Pleon rudimentary. Mandibles having an appendage. Gnathopoda sub-chelate. First two pairs of pereiopoda rudimentary, having branchiæ attached; three posterior pairs subequally robust and long. Anterior pair of pleopoda rudimentary in the male; rest obsolete. [*S.B.*]

533. Protella australis.

Protella australis, Haswell, l. c., p. 276, pl. xii., fig. 4.

Cephalon armed above with a single short, anteriorly-directed spine. Superior antennæ nearly as long as the body; peduncle stout; the second joint the longest; flagellum as long as the last segment of the peduncle. Inferior antennæ as long as the first two segments of the peduncle of the superior pair; flagellum very short. First pair of gnathopoda with the propodos sub-triangular, broad at the base, which is nearly straight, with straight, gradually converging lateral borders; dactylos more than two-thirds of the length of the propodos. Posterior gnathopoda with the propodos

longer than the cephalon, oval; palmar border armed with a fringe of hairs, and with two strong conical teeth near the apex, and another near the base. Posterior pereiopoda sub-equal; propodos with a tooth on its anterior border. The form of the posterior gnathopoda varies in different individuals, and the cephalic spine is sometimes rudimentary. The female of this species differs from the male only in possessing the ovigerous plates. Length 7 lines.

Port Jackson.

Genus CAPRELLA, Lamarck.

Body cylindrical. Cephalon and first segment of the pereion confluent. Pleon rudimentary. Gnathopoda subchelate. First two pairs of pereiopoda absent; three posterior pairs subequal. First and second pairs of pleopoda rudimentary in the male; the rest obsolete.

534. Caprella tenuis.

Caprella tenuis, Haswell, l. c., p. 276, pl. xii., fig. 5.

Cephalon elongated, the upper border terminating anteriorly in an inconspicuous acute tooth. First segment of the pereion longer than, second and third sub-equal with, the cephalon; the rest shorter. Superior antennæ as long as the cephalon and the first two segments of the pereion; flagellum as long as the last two segments of the peduncle. Inferior antennæ longer than the peduncle of the upper pair, ornamented below with a fringe of long hairs. Propodos of anterior gnathopoda ovate, swollen. Propodos of posterior gnathopoda two and a half times the length of that of the anterior pair, narrow; the palm defined by an obscure tooth. Branchiæ longish-ovoid. Pereiopoda stout, short, increasing in length from before backwards; the third pair as long as the fourth and fifth segments of the pereion. Length 6 lines.

Port Jackson.

535. Caprella echinata.

Caprella echinata, Haswell, l. c., Vol. iv., p. 346, pl. xxiii., fig. 2.

Male.—Cephalon rather longer than the other segments, armed on its dorsal surface a little behind the eye with a very prominent

slender, acute spine, and at the posterior end with a second spine of similar form, but shorter; second segment with a pair of short spines a little behind the middle of its dorsal surface; the rest of the segments unarmed. Eyes oval, red. Superior antennæ more than twice the length of the cephalon; flagellum nearly as long as the peduncle. Inferior antennæ nearly as long as the peduncle of the superior pair. Anterior gnathopoda small, about two-thirds of the length of the cephalon. Posterior gnathopoda very large, more than four times as long as the anterior pair; basos long, slender, armed with a compressed tooth at the distal end of its anterior border; carpus small; propodos very large, of irregular form, constricted at the proximal end, broader distally, armed on the dorsal border with three very large, compressed teeth, near the middle, and a small blunt tooth at the distal end; palm defined by a short acute tooth, and armed about its middle with a sharp spine which is separated by a deep sinus from a broad, compressed process occupying the distal third of the palmar border. First pair of pereiopoda more slender than the two posterior pairs, with the dactylos smaller; dactyla of the posterior pairs nearly as long as the propodos, palm defined by a small tooth. Length $\frac{1}{2}$ in.

Clark Island, Port Jackson.

536. **Caprella cornigera.**

Caprella cornigera, Haswell, l. c., p. 347, pl. xxiii., fig. 5.

Neck very long; the other segments increasing in length to the fourth; fifth rather shorter than the fourth; second, third, and fourth segments each with a pair of cornua on the middle of its dorsal border, and a short conical tooth at its posterior extremity. Eyes small, round. Superior antennæ half as long as the cephalon and pereion; flagellum as long as the last segment of the peduncle, of seven articuli, of which the first is very long. Inferior antennæ very small, little longer than the first segment of the peduncle of the superior pair; flagellum as long as the last segment of the peduncle, of four articuli. Anterior gnathopoda small, propodos ovate, narrowing distally; palm nearly longitudinal, undefined. Posterior gnathopoda very large; basos longer than the cephalon; carpus small, sub-triangular; propodos nearly as long as the basos, narrow, palm nearly longitudinal,

defined by a broad, low, triangular process, and armed near the distal end with a sharp tooth. Pereiopoda short and broad, with a well-defined, bristle-armed palm. Colour grey. Length ½ in.

Clark Island, Port Jackson.

537. Caprella inermis.

Caprella inermis, Haswell, l. c., p. 348, pl. xxiii., fig. 3.

Cephalon terminating anteriorly in a minute mesial tooth. Neck very long; first segment of the body longer than the head and neck, the rest shorter. Superior antennæ as long as the cephalon and first segment of the pereion; flagellum shorter than the two last segments of the peduncle. Anterior gnathopoda short; propodos ovate, palm longitudinal, undefined. Posterior gnathopoda very large; propodos elongated, narrow; palm excavate, uniformly concave, occupying about one-third of the entire length of the propodos. Branchiæ sub-cylindrical. Last pair of pereiopoda longer than the others. Colour green. Length $\frac{1}{10}$ in.

Port Jackson.

538. Caprella obesa.

Caprella obesa, Haswell, l. c., p. 348, pl. xxiv., fig. 1.

Male.—Body stout, unarmed; first two segments subequa the rest much shorter. Eyes small, round. Superior antenn rather exceeding in length the cephalon and two succeedir segments; peduncle very stout, flagellum equal in length to tl last segment of the peduncle. Inferior antennæ a little long than the first two segments of the peduncle of the superior pa fringed below with long hairs. Anterior gnathopoda small, p longitudinal, undefined. Posterior gnathopoda very large, ba broad, its anterior border minutely toothed; propodos as l as the cephalon; palm longitudinal, defined by a conical to and armed with two others—of which the proximal is the sm —towards the distal end. Branchiæ clavate. Pereiopoda equal, short and stout, with a distinct palm. Colour Length ½ in.

Clark Island, Port Jackson.

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ADDENDA ET CORRIGENDA.

Introd., p. xvi., line 21, for *Orchestia* read *Talorchestia.*

p. 27, line 20, for TIARMIA read TIARINIA.

p. 53, lines 16 and 17, for *Minippe* read *Menippe.*

p. 65, lines 15 and 16, for *monilifera* read *monilifer.*

p. 70, add another species:—

Pilumnus integer.

Pilumnus integer, Haswell, Proc. Linn. Soc. N.S.W., Vol. vi., p. 545.

Carapace deep, very convex antero-posteriorly, regions very indistinctly indicated, postero-lateral borders parallel. Surface finely granular. Front rather prominent, narrow (the breadth of the interorbital space being contained three and a half times in the breadth of the carapace), divided into two rounded lobes by a mesial notch. Antero-lateral borders entire. Chelipedes in the male very large,—the right propodos larger than the left—the latter granular over all the outer surface with the exception of a triangular space near the base of the mobile finger, the former only granular near the base, a granular ridge near the lower border of the propoda of both chelipedes, becoming entire on the digital portion to the apex of which it extends. Margins of carapace and limbs ornamented with fringes of hairs. Colour brick-red. Length of carapace $\frac{5}{16}$ in; breadth nearly $\frac{3}{8}$ in.

Port Jackson.

p. 74, lines 17 and 18, for *Pararupellia* read *Pararuppellia.*

p. 228.—The species on which the genus Neobule was founded belongs to the *Orchestidæ*, and is allied to the form afterwards named by me *Aspidophoreia.*

p. 308, add another species :—

Apseudes obtusifrons.

Apseudes obtusifrons, Haswell, l. c., p. 748, pl. vi.

Head as long as the two following segments, crossed by oblique grooves in the form of an X ; rostrum short, rounded. Pleon as long as the four last segments of the pereion, ciliate at the sides, the last segment short, its apex bifid. Upper antennæ with the peduncle very stout, first segment nearly as long as the head, second segment about a third of the length of the first, third segment small ; flagellum shorter than the peduncle, with nine segments ; secondary flagellum with six segments. Outer antennæ rather longer than the peduncle of the inner ; basal and second joints of the peduncle thicker than the rest, each with a small ovate, ciliated process ; third and fourth joints very small, fifth greatly elongated ; flagellum with six segments. Mandibles with the palp short, uniarticulate. Maxillipedes richly ciliated internally. First pair of legs with the propodos oval, produced below into a finger which has two low tubercles at its base ; both carpus and propodos thickly clothed with long slender hairs. Second pair of thoracic limbs expanded and foliaceous ; carpus with two short stout spines on its outer border ; propodos with four longer spines on its outer border, and another internal to the insertion of the dactylos ; dactylos taking the form of an ovate plate, closely fringed terminally with fine hairs. Third and fourth pairs of thoracic appendages similar, with the propodos rather short, the dactylos long and very slender ; fifth and sixth pairs with the propodos longer, armed with straight setæ ; dactylos very small, penicillate ; last pair smaller than the rest. Inner flagellum of caudal appendage with 17 joints ; outer very short, two-jointed. Length $\frac{3}{4}$ in.

Port Jackson (dredged on a sandy bottom).

EXPLANATION OF PLATES.

Plate I.

Fig. 1. Xanthodes atromanus, p. 49.
„ 2. Panopœus acutidens, p. 51.
„ 3. Pilumnus monilifer, p. 65.
„ 4. Pilumnus fimbriatus, p. 66.
„ 5. Pilumnus terræ-reginæ, p. 68.
„ 6. Pilumnus fissifrons, p. 68.
„ 7. Melia (?) brevipes, p. 72.

Plate II.

Fig. 1. Pilumnopeus serratifrons, p. 70; 1 *a*, 1 *b*, chelipedes.
„ 2. Utica setosipes, p. 101.
„ 3. Utica crassimana, p. 102.
„ 4. Paragrapsus Gaimardii, p. 105; 4 *a*, 4 *b*, chelipedes.

Plate III.

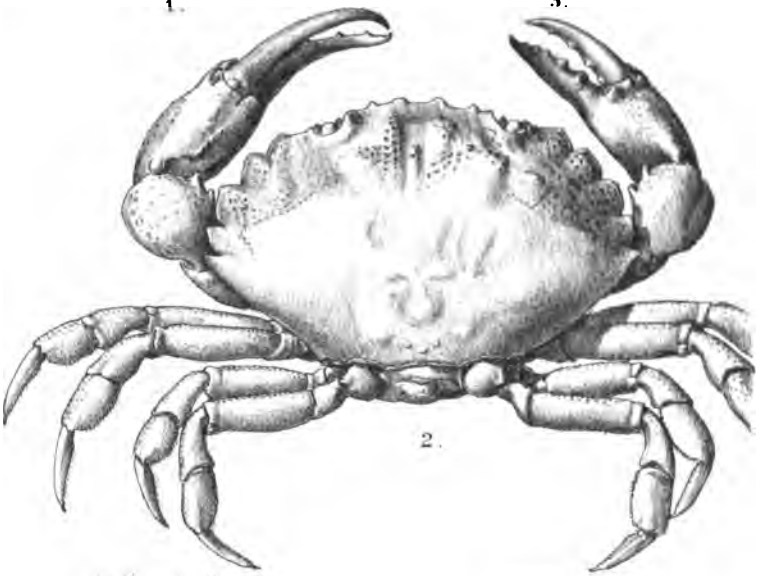
Fig. 1. Paragrapsus quadridentatus, p. 105; 1 *a*, chelipedes.
„ 2. Hymenosoma australe, p. 115; 2 *a*, chelipede.
„ 3. Phlyxia Petleyi, p. 125.
„ 4. Dromia conchifera, p. 141.
„ 5. Gebia spinifrons, p. 165; 5 *a*, upper view of carapace.

Plate IV.

Fig. 1. Lysianassa nitens, p. 232; 1 *a*, anterior gnathopoda; 1 *b*, inferior antennæ, x 22.
„ 2. Lysianassa affinis, p. 232; 2 *a*, inferior antennæ; 2 *b*, anterior gnathopoda, x 22.
„ 3. Glycerina tenuicornis, p. 234, magnified.
„ 4. Icilius australis, p. 275, magnified; 4 *a*, first pair of pereiopoda; 4 *b*, second pair.

1.

3.



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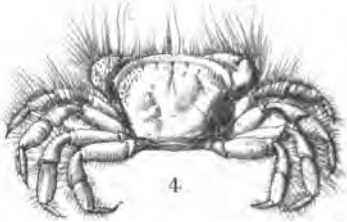
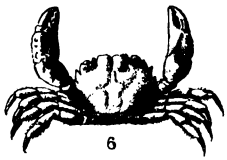


4.

5.

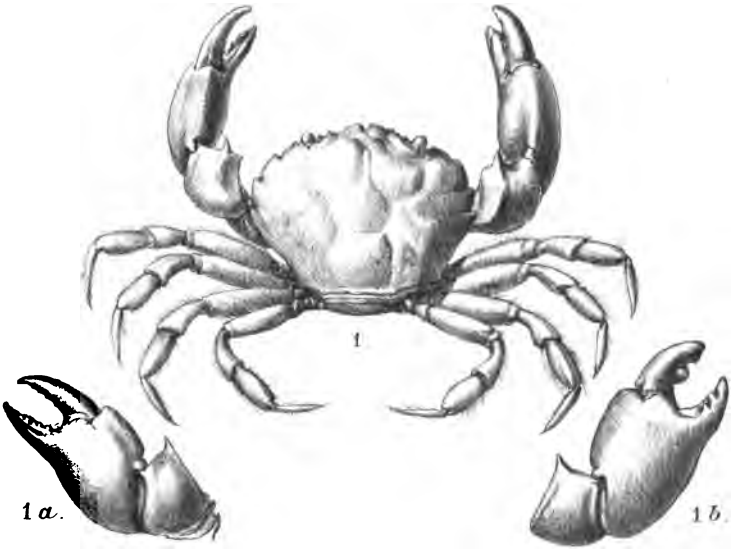


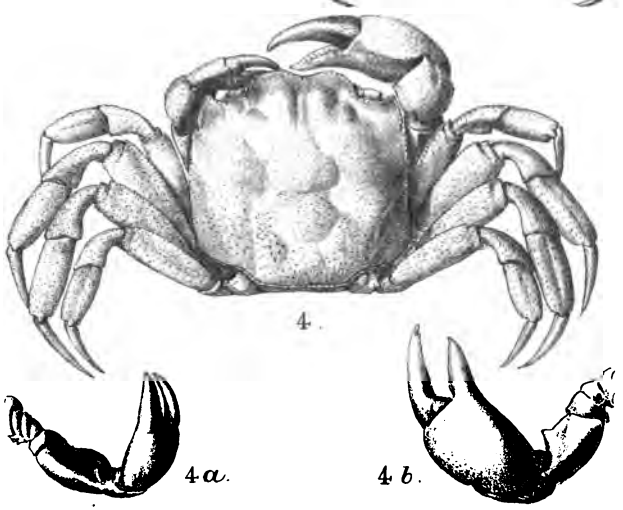
6.

7.

G.H.B. delt.

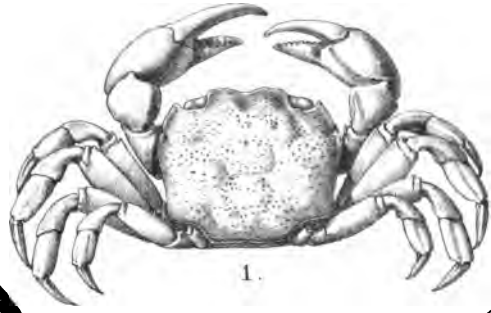
S. Sedgfield. Lith.





G.H.B delt

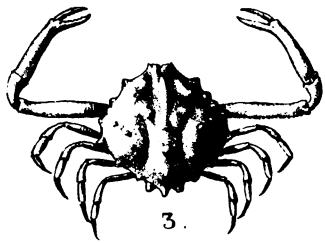
S. Sedgfield. Lith



1.

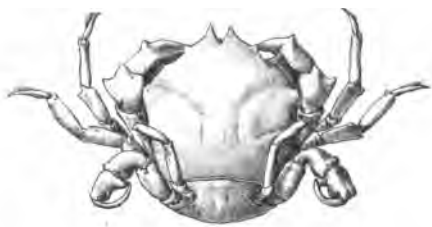
1 a.

2 a.



3.

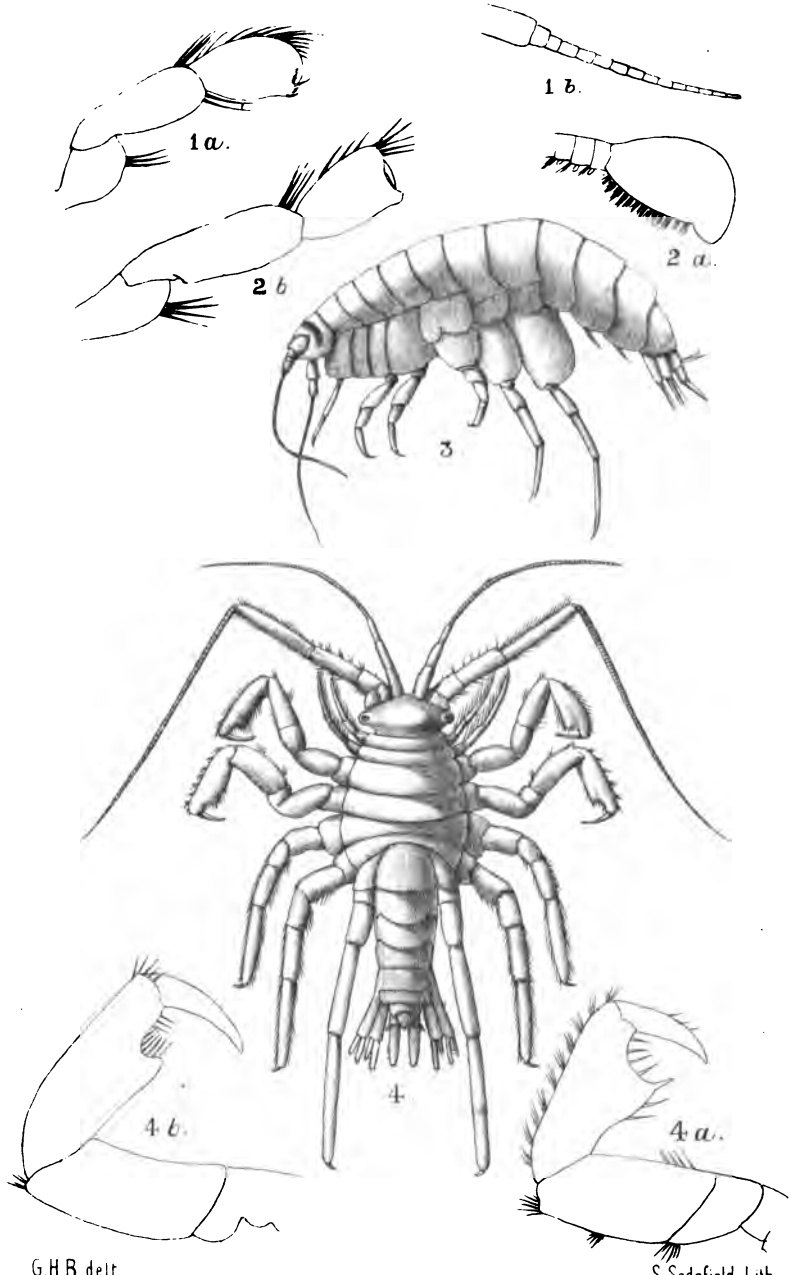
2.



4.

5.

5 a.



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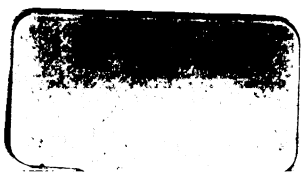
S. Sedgfield. Lith